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ABSTRACT

The Objective-Item Bank presented covers 16 sections of four subject areas in each of four grade levels. The four areas are: Language Arts, Math, Social Studies, and Science. The four grade levels are: Primary, Intermediate, Junior High, and High School. The Objective-Item Bank provides school administrators with an initial starting point for curriculum development and with the instrumentation for program evaluation, and offers a mechanism to assist teachers in stating more specifically the goals of their instructional program. In addition, it provides the means to determine the extent to which the objectives are accomplished. This document presents the Objective Item Bank for intermediate mathematics. (CK)

INTERMEDIATE MATHEMATICS
BEHAVIORAL OBJECTIVES AND TEST ITEMS

EVALUATION FOR INDIVIDUALIZED INSTRUCTION

A Title III ESEA project
administered by
Downers Grove, Illinois
School District 99

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individualized instruction • inservice workshops to improve skills in evaluating new programs • pupil progress •

EII

1400 West Maple Avenue
Downers Grove, Illinois 60515
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	Lang. Arts	Math.	Soc. Stud.	Science
Primary				
Intermediate		X		
Junior High				
High School				

INTERMEDIATE MATHEMATICS

BEHAVIORAL OBJECTIVES AND TEST ITEMS

by Dr. Marcus Lieberman, Director
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Evaluation for Individualized Instruction Project
AN ESEA TITLE III PROJECT
Administered
by
Downers Grove Public School District 99

BEHAVIORAL OBJECTIVE - TEST ITEM BANK

BACKGROUND

The Evaluation for Individualized Instruction Project, an ESEA Title III project administered by the Downers Grove, Illinois, School District 99, has developed an Objective-Item Bank covering sixteen sectors of four subject areas in each of four grade levels.

Subject Area

	LA	MA	SS	SC
1	11	12	13	14
2	21	22	23	24
3	31	32	33	34
4	41	42	43	44

LA = Language Arts
MA = Math
SS = Social Studies
SC = Science

1 = Primary
2 = Intermediate
3 = Junior High
4 = High School

Nearly 5000 behavioral objectives and over 27,000 test items based on these objectives were recently published as the culmination of this three-year project. The complete output of seventeen volumes totals over 4500 pages. These publications have been reproduced by the Institute for Educational Research to make them available at cost to teachers and administrators.

The objectives and items were written by over 300 elementary and secondary teachers, representing forty Chicago suburban school districts, who participated in workshops of three to nine weeks duration throughout the project. In these workshops they learned to write effective behavioral objectives and test items based on the objectives. The results of their work were edited for content and measurement quality to compile the largest pool of objectives and test items ever assembled.

PRINCIPLES AND MERITS

Unfortunately, the Objective-Item Bank is often viewed mainly as a source of test items. Although this is an important function, its greatest potential impact lies not in the availability of a multitude of test items, but rather in the ability of these items to measure carefully selected educational goals.

The almost frenetic search for test items on the part of some educators has been spurred by the current emphasis on measurement. Some educators have become so enamored with measurement that they seem more interested in obtaining a numerical index than examining what they are really trying to measure. Further, it is not unusual for teachers to speak about a child obtaining a score of 95% on a particular test. Frequently, they encounter considerable difficulty in interpreting the real meaning of a score and are content to just accept its numeral value. A much more important question would seem to be: What are our goals of measurement? Unless we can answer this question precisely, the only real purpose that testing serves is to gather data concerning pupils to facilitate the marking of report cards. This is not to say that this function is not legitimate - it is rather to say that such a view of measurement is much too constricting. The goal of measurement should be to provide feedback both to the teacher and the child regarding the success or failure of the learning experiences in realizing specifically stated objectives.

One of the main strengths of the EII Objective and Item Bank is that all the items are directly tied to specifically stated objectives. Each group of items is designed to measure a specific objective and therefore provides the means whereby the teacher can obtain feedback on the success of the educational program.

It is disheartening to observe so many districts attacking the complex problem of curriculum development independently. One cannot help reflecting on the mammoth duplication of efforts involved. The Objective-Item Bank offers a possible alternative to this duplication. Utilizing its resources, the curriculum committee is provided with some point of departure. The efforts of three hundred teachers participating in the Evaluation Project's workshops and the thoughts of forty districts can be evaluated and utilized. This is not to suggest that any set of objectives should be viewed as the "answer" to an individual district's curricular problem but rather the efforts of others offer a convenient point of departure and may serve to stimulate diverse opinions about the direction of curricular thrust within the individual district. The words of Sir Isaac Newton seem appropriate; "If I have seen further, it is by standing upon the shoulder of giants." The efforts of others, whether we consider them giant-like or pygmyish, do offer a threshold to view the immense, complicated problem of curricular development in better perspective.

The title of an article in a recent educational journal, "If You're Not Sure Where You're Going, You're Liable to End up Someplace Else," succinctly describes a continuing dilemma in our educational system. The vagueness of our goals often promotes the idea that "anything goes." Without a guiding beacon many classrooms become activity-centered rather than goal-oriented. One educator recently compared the all-too-typical classroom with Henry Ford's observation concerning history. He defined history as, "One damned thing after another." Is this true of the succession of activities within our classrooms? Does the teacher really know the educational purpose of each activity? Perhaps, even more importantly, do the children know the purpose?

The Objective-Item Bank offers a mechanism to assist teachers in stating more specifically the goals of their instructional program and further provides the means to determine the extent to which the objectives are accomplished. The specification of goals assists the teacher in discovering whether favored activities advance learning, or are merely time fillers; whether they get the "materials" across, or are merely perfunctory exercises.

Much discussion has been devoted to the topic of "why individualized instruction?" and occasionally some dialogue has even centered on the "how." But an even more basic question is one that is often ignored: "Individualize what?"

Many school districts mention their individualized programs in reading or mathematics. What is individualized within these programs? Are certain skills definitely identified? Is the practice of pretesting to determine the child's level of proficiency when he enters the program a guideline?

The Objective-Item Bank has two potential contributions to make to all school districts embarking on or presently engaged in individualized instruction programs. These contributions are: 1. A group of well-specified objectives which could form the "what" of the program. 2. A set of items designed to provide information on the degree of mastery of the objective.

APPLICATIONS AND TECHNIQUES

The versatility of the Objective-Item Bank is evident in the value and usability by both teachers and administrators.

To the Administration the Objective-Item Bank:

1. Provides an initial starting point for curriculum development. The existence of many objectives avoids the necessity of each district duplicating the efforts of another. The task of the curriculum committee becomes one of selecting and/or rejecting objectives from the Objective - Item Bank and then supplementing them with objectives developed at the local level. Past-participants of the Evaluation Project workshops would be valuable resource people in this endeavor.
2. Provides the instrumentation for program evaluation. The selection of items from those objectives representative of the main emphases of the local district provides the framework for the evaluation of the stated goals.

To the Teacher the Objective-Item Bank:

1. Provides the pooling of talent and imagination of teachers of varied experience and interests, thus avoiding the present duplication of effort.
2. Provides resources for more highly sensitized program evaluation instead of a battery of standardized tests. Since the objectives are tailored to the program, the associated test items can be used to determine precisely the efficacy of the instructional materials.
3. Provides the means whereby the teacher can become more acutely aware of that which he is seeking to have occur in his classroom and that which he will accept as evidence of its occurrence. Hopefully, as teachers become more aware of their goals, they will share these

objectives with children and let the pupils become acutely aware of that which is expected of them, ergo allowing them to seek their own modality of instruction for the realization of the stated goals.

4. Provides the nucleus of an individualized instruction program.

    a. It provides for more precise curriculum planning by differentiating those goals specific to each grade and even to each student. With the bank at their disposal, teachers are encouraged to become aware of their responsibilities in developing a set of basic objectives which every child must attain and a further set which can be pursued according to the students' abilities and interests.

    b. It provides several items per objective, some of which may be used as a pre-test to discover whether a student should undertake that objective while the remainder may be employed to measure the mastery of those students who do tackle the objective.

NOTES

Several of the volumes have been reproduced from punched cards by the IBM 407, a machine which does not print all characters exactly as they appear on a typewriter. Thus:

% is actually (

⌑ is actually)

0 is actually ? or !

Apostrophes cannot be printed.

The number immediately after the statement of each objective represents the number of items measuring attainment of that objective.

Information on the EII publications or purchase requests can be directed to:

INSTITUTE FOR EDUCATIONAL RESEARCH
1400 West Maple Avenue
Downers Grove, Illinois 60515

INTERMEDIATE MATHEMATICS

NUMBERS & NUMERATION

NAMES

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF THE DIFFERENT WAYS OF NAMING NUMBERS BY IDENTIFYING A NUMBER IN ANOTHER EXPRESSED FORM FROM A GIVEN LIST. 0260

Directions: Put an (X) in front of the correct answer.

Three thousand, six hundred 0001

a. 306
b. 30006
*c. 3600

Two million, ninety-two 0002

a. 292
*b. 2000092
c. 200902

Ten thousand, three hundred, twelve 0003

a. 1030012
b. 130012
*c. 10312

Eighty hundred, forty-six 0004

a. 800046
*b. 8046
c. 80046

Forty-three thousand, five hundred, seventy 0005

a. 43500070
b. 4350070
*c. 43570

Eight thousand, forty-six 0006

a. 80046
*b. 8046
c. 846

Thirty-four thousand, six hundred, eighty 0007

*a. 34680
b. 346080
c. 304680

Three hundred twenty thousand two hundred 0008

a. 300200
b. 30020200
*c. 320200

Eleven million six hundred 0009

a. 11600
*b. 11000600
c. 1100600

Four hundred fifty-three thousand 0010

a. 40053
b. 453
*c. 453000

100027 0011

a. one million twenty-seven
*b. one hundred thousand twenty-seven
c. ten thousand twenty-seven

60606 0012

a. Six hundred six thousand six
b. Six thousand six hundred six
*c. Sixty thousand six hundred six

1029 0013

*a. Ten hundred twenty-nine
b. Ten thousand twenty-nine
c. One thousand two hundred nine

70237 0014

a. Seven hundred thousand two hundred thirty-seven
b. Seven thousand two hundred thirty-seven
*c. Seventy thousand two hundred thirty-seven

2000092 0015

*a. Two million ninety-two
b. Two million nine hundred two
c. Two million two hundred ninety-two

3600 0016

a. Thirty six thousand
*b. Thirty six hundred
c. Three hundred sixty

7777077 0017

a. Seven million seventy hundred seventy-seven
*b. Seven million seven hundred seventy-seven thousand seventy-seven
c. Seven million seven hundred thousand seventy-seven

4040044

0018

a. Four million forty-four thousand
b. Four hundred forty thousand forty-four
*c. Four million forty thousand forty-four

26620

0019

a. Twenty thousand six hundred twenty
*b. Twenty-six thousand six hundred twenty
c. Twenty six thousand twenty

Source: Houghton Mifflin, pp. 9-11.

PLACE HOLDERS AND VALUE

THE STUDENT CAN DEMONSTRATE KNOWLEDGE OF PLACEHOLDERS BY COUNTING THE PLACE HOLDERS IN THE FIRST NUMBER OF THE EXPANSION OF A GIVEN NUMBER. 0002

In the expansion of 1234, the number 1000 is first in the list. 1000 has 0020

a. 1 place holder
b. 2 place holders
*c. 3 place holders

Source: Elementary School Mathematics #4, 2nd Ed., Addison-Wesley, Ch. 5
"Peas and Particles" Elementary Science Study, Webster, McGraw-Hill.

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF PLACE HOLDERS BY TRANSLATING THE NUMBER OF PLACE HOLDERS IN A GIVEN NUMBER INTO POWERS OF TEN. 0003

The number 1000 may be written, in powers of ten, as 0021

a. 1×10^2
*b. 1×10^3
c. 1×10^1

Source: Elementary School Mathematics #4, 2nd Ed., Addison-Wesley Ch. 5
"Peas and Particles" Elementary Science Study, Webster, McGraw-Hill

THE STUDENT CAN DEMONSTRATE A KNOWLEDGE OF PLACE BY COUNTING THE NUMBER OF PLACES AFTER THE FIRST DIGIT IN ANY NUMBER. 0007

The number 1.234 has 0022

- *a. three places after the decimal
- b. two places after the decimal
- c. one place after the decimal

Source: Elementary School Mathematics #4, 2nd Ed., Addison-Wesley, Ch. 5
"Peas and Particles" Elementary Science Study, Webster, McGraw-Hill

THE STUDENT CAN DEMONSTRATE A KNOWLEDGE OF PLACE BY COUNTING THE NUMBER OF PLACES FOLLOWING THE FIRST DIGIT ON ANY NUMBER. 0008

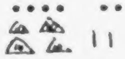
Look at the number 1234. The number of places after the digit (1) is 0023

- a. 1
- b. 2
- *c. 3

Source: Elementary School Mathematics #4, 2nd Ed., Addison-Wesley, Ch. 5
"Peas and Particles" Elementary Science Study, Webster, McGraw-Hill

THE STUDENT DEMONSTRATES KNOWLEDGE OF PLACE VALUE NAMES BY CHOOSING THE CORRECT POSITIONS FOR GIVEN NUMERALS. 0030

The number 42 can be expressed by 0024

- a. 4 + 2
- b. .... ..
- *c. 
- d. 40 x 2

Three hundreds, seven tens, three ones are: 0025

a. 3071
b. 300 + 7 + 3
*c. 373
d. 3703

In the number 56031, the zero represents 0026

a. tens
*b. hundreds
c. thousands
d. ten thousands

The compact or standard numeral for 30,000 + 4000 + 70 + 6 is: 0027

*a. 34076
b. 34706
c. 30476
d. 34760

The compact or standard numeral for fifty-four thousand nine hundred eighty can be stated as: 0028

a. 5980
b. 54908
*c. 54980
d. 50498
e. 54098

The expanded notation for 41605 is: 0029

a. 4000 + 16 + 5
b. 4000 + 1000 + 600 + 50
*c. 40000 + 1000 + 600 + 5
d. 41000 + 1000 + 600 + 5
e. 40000 + 1000 + 600 + 50

The population of Paris in 1962 was about 2 million 8 hundred thousand. Which digits name this population? 0030

a. 2008000
*b. 2,800,000
c. 2,080,000
d. 280,000

THE STUDENT SHOWS KNOWLEDGE OF PLACE VALUE BY SELECTING THE CORRECT PLACE VALUE FOR A GIVEN NUMBER. 0133

Directions: Given the number 41,875,362,083 which of the following is true about place value.

The digit 2 is in which place: 0031

a. hundreds
b. tens
*c. thousands
d. ten-thousands

The digit in the millions place is: 0032

a. 1
*b. 5
c. 2
d. 3

The digit three is in which place: 0033

*a. ones
b. ten-thousands
c. millions
d. ten millions

The largest place value used is: 0034

*a. ten millions
b. ten billions
c. ten thousands
d. ten trillions

Three consecutive places from smallest to largest are: 0035

a. tens, thousands, hundreds
b. ones, hundreds, thousands
c. hundreds, ten thousands, hundred thousands
*d. hundreds, thousands, ten thousands

The three places in the thousands period are 0036

a. ones, tens, hundreds
b. tens, hundreds, thousands
*c. thousands, ten thousands, hundred thousands
d. ten thousands, hundred thousands, millions

GIVEN A VARIETY OF NUMERALS THE STUDENT WILL SHOW AN UNDERSTANDING OF THE PLACE VALUES OF NUMBERS GREATER THAN ONE THOUSAND BY SELECTING THE CORRECT PLACE VALUE FOR THOSE NUMBERS. 0163

Given a numeral circle a if the 6 is in ten thousands place; b if the 6 is in one hundred thousands place; and c if the 6 is in one millions place. 0037

a *b c	1,683,234
a b *c	6,384,432
*a b c	9,263,321

In the numeral 999,999 the nine in the ten thousands place is ten times as big as 0038

a. the nine in ones place
b. the nine in hundreds place
*c. the nine in one thousands place
d. the nine in tens place

In the addition of numeral with face value each greater than nine thousand the sum will be 0039

a. less than ten thousand
b. equal to ten thousand
*c. greater than ten thousand

In the numeral 123,456 the digit which has the greatest value is in the 0040

*a. hundred thousands place
b. hundreds place
c. thousands place
d. ten thousands place

The numeral 685,497 equals 0041

a. (6 x 100,000) + (8 x 1,000) + (5 x 10,000) + 497
*b. (5 x 1,000) + (8 x 10,000) + (6 x 100,000) + 497
c. (6 x 10,000) + (8 x 100,000) + (5 x 1,000) + 497

THE STUDENT WILL APPLY HIS KNOWLEDGE OF FACE VALUE, PLACE VALUE AND TOTAL VALUE BY IDENTIFYING THE MEANING OF EACH VALUE IN GIVEN EXAMPLE. 0265

Directions: Choose the correct answer by circling the letter in front of it.

In 465 the 6 has 0042

a. a face value of 65, a place value of 60, a total value of 60.
*b. a face value of 6, a place value of 10, a total value of 60.
c. a face value of 6, a place value of 60, a total value of 65.

In 3069 the 9 has 0043

a. a face value of 69, a place value of 6, a total value of 60.
b. a face value of 60, a place value of 10, a total value of 9.
*c. a face value of 9, a place value of 1, a total value of 9.

In 987 the 9 has 0044

*a. a face value of 9, a place value of 100, a total value of 900.
b. a face value of 900, a place value of 90, a total value of 9.
c. a face value of 9, a place value of 900, a total value of 987.

In 1967 the 1 has 0045

a. a face value of 1, a place value of 100, a total value of 1900.
*b. a face value of 1, a place value of 1000, a total value of 1000.
c. a face value of 1, a place value of 1000, a total value of 1900.

In 39,765 the 3 has 0046

a. the face value of 39, the place value of 10000, the total value of 39,000.
*b. the face value of 3, the place value of 10000, the total value of 30,000.
c. the face value of 3, the place value of 30,000, the total value of 33,000.

In 89 the 8 has 0047

*a. a face value of 8, a place value of 10, a total value of 80.
b. a face value of 80, a place value of 8, a total value of 10.

In 7693 the 9 has 0048

a. a face value of 90, a place value of 9, a total value of 99.
b. a face value of 10, a place value of 9, a total value of 90.
*c. a face value of 9, a place value of 10, a total value of 90.

In 437 the 4 has 0049

a. a face value of 40, a place value of 100, a total value of 440.
b. a face value of 400, a place value of 4, a total value of 40.
*c. a face value of 4, a place value of 100, a total value of 400.

In 2367 the 2 has 0050

*a. a face value of 2, a place value of 1000, a total value of 2000.
b. a face value of 2000, a place value of 2, a total value of 4000.
c. a face value of 2, a place value of 2000, a total value of 2000.

In 54693 the 6 has 0051

a. a face value of 10, a place value of 6, a total value of 6000.
b. a face value of 100, a place value of 6, a total value of 600.
*c. a face value of 6, a place value of 100, a total value of 6000.

Source: Houghton Mifflin, Pg. 12.

EXPANDED NOTATION

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF NUMBERS BY WRITING A GIVEN NUMBER IN EXPANDED NOTATION. 0001

The number 1234 may be written in expanded notation as 0052

a. 100
2000
30
4

b. 1000
2000
3000
4000

*c. 1000
200
30
4

Source: Elementary School Mathematics #4, 2nd Ed., Addison-Wesley, Ch. 5.
"Peas and Particles" Elementary Science Study, Webster, McGraw-Hill.

THE STUDENT WILL APPLY HIS KNOWLEDGE OF COMPACT NUMERALS BY CHOOSING THE CORRECT EXPANDED NUMERAL FROM A GIVEN LIST. 0264

Directions: Place an X on the line before the correct answer.

3000 + 200 + 40 + 5 is the expanded numeral for 0053

a. 32045
b. 30245
*c. 3245

9000 + 900 + 90 + 9 is the expanded numeral for 0054

*a. 9999
b. 99099
c. 9009

500 + 70 + 2 is the expanded numeral for 0055

a. 50072
*b. 572
c. 5702

8000 + 400 + 9 is the expanded numeral for 0056

*a. 8409
b. 8049
c. 849

6000 + 10 + 3 is the expanded numeral for 0057

a. 6103
*b. 6013
c. 60103

9000 + 500 + 40 is the expanded numeral for 0058

a. 9054
b. 9504
*c. 9540

700 + 2 is the expanded numeral for 0059

*a. 702
b. 7002
c. 72

4000 + 100 + 3 is the expanded numeral for 0060

a. 413
*b. 4103
c. 4013

8000 + 200 + 40 + 3 is the expanded numeral for 0061

a. 80243
b. 820403
*c. 8243

1000 + 400 + 20 + 5 is the expanded numeral for 0062

a. 10425
*b. 1425
c. 14025

100 + 60 + 1 is the expanded numeral for 0063

*a. 161
b. 1061
c. 1601

1000 + 20 + 9 is the expanded numeral for 0064

a. 10029
b. 1209
*c. 1029

600 + 2 is the expanded numeral for 0065

a. 6002
*b. 602
c. 62

80 + 6 is the expanded numeral for 0066

*a. 86
b. 806
c. 860

7000 + 60 + 6 is the expanded numeral for 0067

a. 766
b. 7606
*c. 7066

90 + 3 is the expanded numeral of 0068

a. 903
*b. 93
c. 930

2000 + 500 + 50 + 5 is the expanded numeral for 0069

*a. 2555
b. 25005
c. 205055

3000 + 3 is the expanded numeral of 0070

a. 303
b. 33
*c. 3003

7000 + 70 + 1 0071

*a. 7071
b. 7701
c. 70701

900 + 60 + 6 0072

a. 9066
*b. 966
c. 9606

Source: Houghton Mifflin, Pg. 49.

THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF A COMPACT NUMERAL BY CHOOSING THE CORRECT NUMERAL FROM A GIVEN LIST. 0267

Directions: Match column I with column II by placing the letter from column I on the line before the correct answer in column II.

	Column I			
	Thousands	Hundreds	Tens	Ones
a	3	0	12	6
b	0	24	3	6
c	0	91	0	26
d	4	0	34	6
e	0	53	0	6
f	9	0	63	6
g	5	6	0	16
h	0	43	2	6
i	0	26	0	16
j	3	2	0	16

Column II		
e	5306	0073
i	2616	0074
f	9636	0075
b	2436	0076
h	4326	0077
a	3126	0078
d	4346	0079
g	5616	0080

Source: Houghton Mifflin, Pg. 14.

ROUNDING

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF ROUNDING BY ESTIMATING PRODUCTS USING THE RULES OF ROUNDING TWO DIGIT FACTORS TO THE NEAREST TEN, AND THREE DIGIT FACTORS TO THE NEAREST ONE HUNDRED. 0057

The answer to 63 x 523 by estimation is closest to 0081

*a. 30000
b. 3500
c. 3000
d. 36000

If you estimate the product of 49 and 723 your closest answer would be 0082

a. 28000
b. 3750
c. 2800
*d. 35000

The closest estimation to the product of 56 and 495 is 0083

a. 25000
b. 2000
c. 3000
*d. 30000

Estimate the answer tc 38 x 921 = 0084

is approximately

a. 40000
b. 2700
*c. 36000
d. 27500

GIVEN A SPECIFIC NUMBER THE STUDENT WILL APPLY HIS KNOWLEDGE OF ROUNDING NUMBERS TO SELECT AN APPROXIMATE ROUNDED NUMBER FOR EACH. 0167

Directions: Select the correct answer.

6,845,478 rounded to the nearest ten. 0085

a. 6,845,470
*b. 6,845,480
c. 6,845,500
d. 6,845,400

5,979,345 rounded to the nearest thousand. 0086

*a. 5,979,000
b. 5,980,500
c. 5,980,000
d. 5,979,500

8,623,892 rounded to the nearest hundred. 0087

a. 8,623,800
b. 8,623,000
*c. 8,623,900
d. 8,620,000

3,986,421 rounded to the nearest million. 0088

a. 3,000,000
*b. 4,000,000
c. 3,900,000
d. 3,800,000

2,918,433 rounded to the nearest ten thousand. 0089

a. 2,908,000
b. 2,900,000
c. 2,915,000
*d. 2,920,000

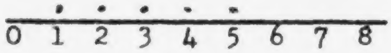
4,718,629 rounded to the nearest hundred thousand. 0090

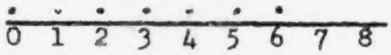
*a. 4,720,000
b. 4,800,000
c. 4,700,000
d. 4,710,000

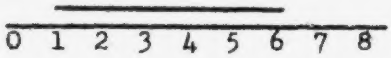
NUMBER LINE

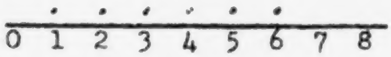
THE STUDENT CAN DEMONSTRATE KNOWLEDGE OF THE NUMBER LINE BY LOCATING NUMBERS ON THE GIVEN NUMBER LINE. 0022

Select the graph which represents the whole numbers from 1 to 6, inclusive. 0091

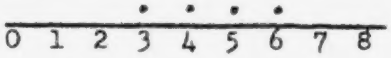
a. 

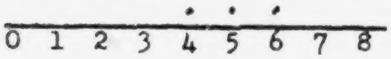
b. 

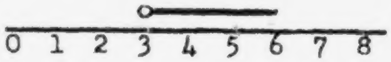
c. 

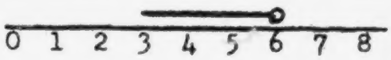
*d. 

Select the graph which represents the numbers between 3 and 6, including 6. 0092

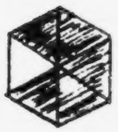
a. 

b. 

*c. 

d. 

THE STUDENT RECALLS NUMBER LINES AND REGIONS BY USING THEM TO EXPRESS FRACTIONS. 0066



Using the figure on the left, the fraction that compares the shaded area to the total region is 0093

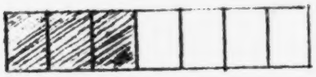
a. $\frac{1}{5}$

b. $\frac{1}{6}$

*c. $\frac{5}{6}$

d. $\frac{5}{5}$

The shaded area is ________ of the total region. 0094



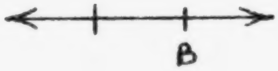
a. $\frac{1}{2}$

b. $\frac{4}{7}$

c. $\frac{3}{10}$

*d. $\frac{3}{7}$

Point B would be labeled __________. 0095



a. $\frac{2}{4}$

b. $\frac{3}{6}$

c. $\frac{1}{3}$

*d. $\frac{2}{3}$

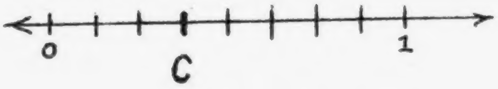
Point C would be labeled ______________. 0096

a. $\frac{1}{4}$

b. $\frac{2}{4}$

c. $\frac{1}{3}$

*d. $\frac{3}{8}$



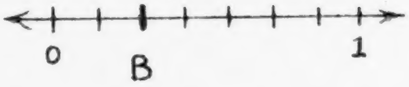
Point B would be labeled ___________. 0097

a. $\frac{2}{6}$

b. $\frac{1}{3}$

*c. $\frac{2}{7}$

d. $\frac{2}{8}$

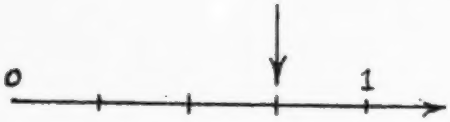


THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF THE CORRELATION BETWEEN FRACTIONS AND RATIONAL NUMBERS BY LABELING POINTS ON THE NUMBER LINE. 0107

Directions: Choose the fraction that is indicated by the point on the number line.

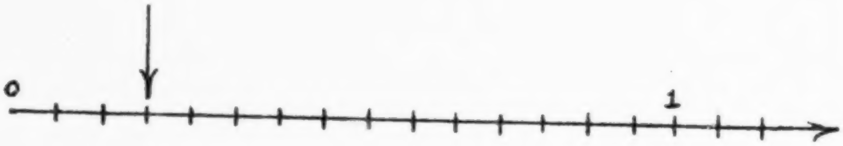
0098

a. $\frac{4}{5}$
b. $\frac{3}{5}$
*c. $\frac{3}{4}$
d. $\frac{3}{5}$



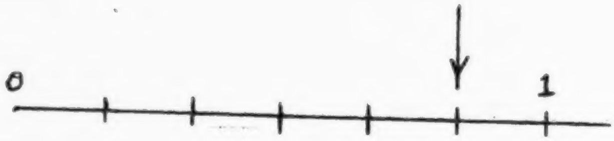
0099

a. $\frac{4}{14}$
b. $\frac{4}{15}$
*c. $\frac{3}{15}$
d. $\frac{3}{14}$



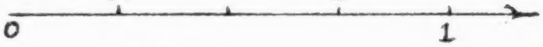
0100

*a. $\frac{5}{6}$
b. $\frac{6}{7}$
c. $\frac{4}{6}$
d. $\frac{5}{7}$

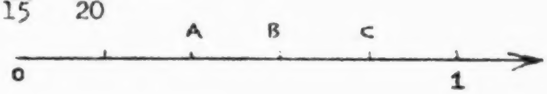


Directions: Choose and circle the letter of the point on the number line that names the set of equivalent fractions.

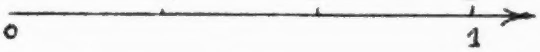
[✓ A] B C $\frac{1}{4}, \frac{2}{8}, \frac{3}{12}, \frac{4}{16}, \ldots$ 0101



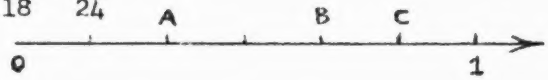
A [✓ B] C $\frac{3}{5}, \frac{6}{10}, \frac{9}{15}, \frac{12}{20}, \ldots$ 0102



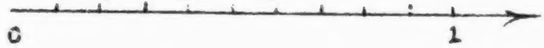
[✓ A] B C $\frac{1}{3}, \frac{2}{6}, \frac{3}{9}, \frac{4}{12}, \ldots$ 0103



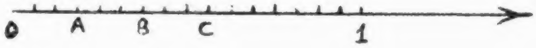
A B [✓ C] $\frac{5}{6}, \frac{10}{12}, \frac{15}{18}, \frac{20}{24}, \ldots$ 0104



A [✓ B] C $\frac{2}{5}, \frac{4}{10}, \frac{6}{15}, \frac{8}{20}, \ldots$ 0105



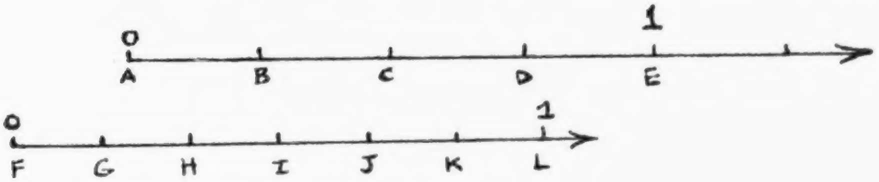
A [✓ B] C $\frac{3}{8}, \frac{6}{16}, \frac{9}{24}, \frac{12}{32}, \ldots$ 0106



Source: Addison-Wesley, Bk. 5, pp. 220-221.

THE STUDENT WILL APPLY HIS KNOWLEDGE OF RATIONAL NUMBERS TO DETERMINE THE RELATIONSHIP BETWEEN TWO POINTS ON TWO NUMBER LINES. 0108

Directions: By looking at the number lines choose the relationship between the given points. If the first point represents a rational number larger than the second point cross out the L.; if the first point represents a rational number smaller than the second cross out the S.; if the two points represent the same rational number, cross out the E.



B, G 0107

*a. L
b. S
c. e

B, H 0108

a. L
*b. S
c. E

C, J 0109

a. L
*b. S
c. E

C, I 0110

a. L
b. S
*c. E

D, J 0111

*a. L
b. S
c. E

D, K 0112

a. L
*b. S
c. E

E, K 0113

*a. L
b. S
c. E

A, G 0114

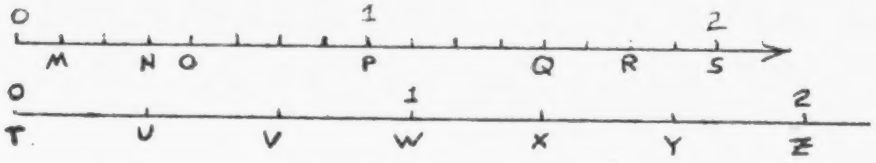
a. L
*b. S
c. E

E, L 0115

a. L
b. S
*c. E

E, K 0116

*a. L
b. S
c. E


0
1
2
M
N
O
P
Q
R
S
0
1
2
T
U
V
W
X
Y
Z

N, U 0117

*a. L
b. S
c. E

O, V 0118

a. L
*b. S
c. E

P, W 0119

a. L
b. S
*c. E

Q, X 0120

*a. L
b. S
c. E

Q, Y 0121

a. L
*b. S
c. E

Y, R 0122

a. L
*b. S
c. E

Z, S 0123

a. L
b. S
*c. E

U, M 0124

*a. L
b. S
c. E

T, M 0125

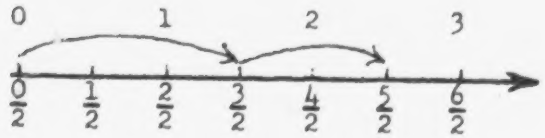
a. L
*b. S
c. E

S, Y 0126

*a. L
b. S
c. E

THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF ADDITION AND SUBTRACTION OF FRACTIONS ON NUMBER LINES BY CHOOSING THE EQUATION REPRESENTED BY A NUMBER LINE. 0113

Directions: Choose the answer that correctly identifies the equation suggested by the number line.


0
1
2
3
$\frac{0}{2}$
$\frac{1}{2}$
$\frac{2}{2}$
$\frac{3}{2}$
$\frac{4}{2}$
$\frac{5}{2}$
$\frac{6}{2}$

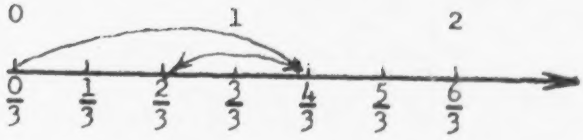
0127

a. $\frac{0}{2} + \frac{3}{2} = \frac{5}{2}$

b. $\frac{3}{2} + \frac{5}{2} = \frac{8}{2}$

*c. $\frac{3}{2} + \frac{2}{2} = \frac{5}{2}$

d. $\frac{3}{2} + \frac{5}{2} = \frac{8}{4}$


0
1
2
$\frac{0}{3}$
$\frac{1}{3}$
$\frac{2}{3}$
$\frac{3}{3}$
$\frac{4}{3}$
$\frac{5}{3}$
$\frac{6}{3}$

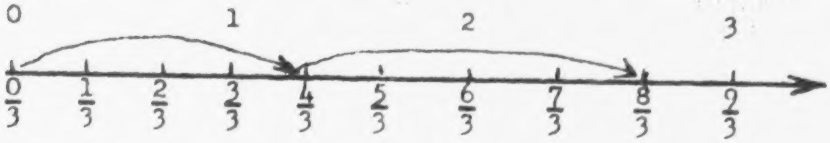
0128

a. $\frac{2}{3} - \frac{4}{3} = \frac{2}{3}$

*b. $\frac{4}{3} - \frac{2}{3} = \frac{2}{3}$

c. $\frac{4}{3} - \frac{2}{3} = \frac{6}{3}$

d. $\frac{2}{3} - \frac{2}{3} = \frac{2}{3}$


0
1
2
3
$\frac{0}{3}$
$\frac{1}{3}$
$\frac{2}{3}$
$\frac{3}{3}$
$\frac{4}{3}$
$\frac{5}{3}$
$\frac{6}{3}$
$\frac{7}{3}$
$\frac{8}{3}$
$\frac{9}{3}$

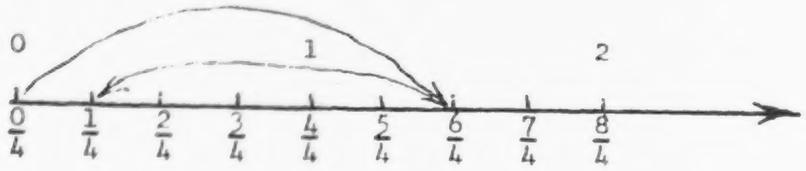
0129

*a. $\frac{4}{3} + \frac{4}{3} = \frac{8}{3}$

b. $\frac{8}{3} - \frac{4}{3} = \frac{4}{3}$

c. $\frac{4}{3} + \frac{5}{3} = \frac{8}{3}$

d. $\frac{8}{3} - \frac{4}{3} = \frac{0}{3}$



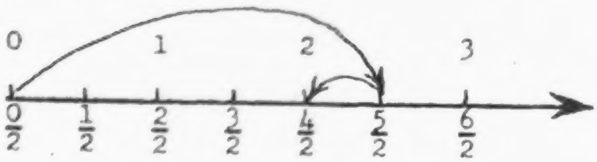
0130

a. $\frac{1}{4} + \frac{5}{4} = \frac{6}{4}$

b. $\frac{6}{4} - \frac{1}{4} = \frac{5}{4}$

*c. $\frac{6}{4} - \frac{5}{4} = \frac{1}{4}$

d. $\frac{5}{4} + \frac{1}{4} = \frac{6}{4}$



0131

a. $\frac{4}{2} + \frac{1}{2} = \frac{5}{2}$

b. $\frac{1}{2} + \frac{4}{2} = \frac{5}{2}$

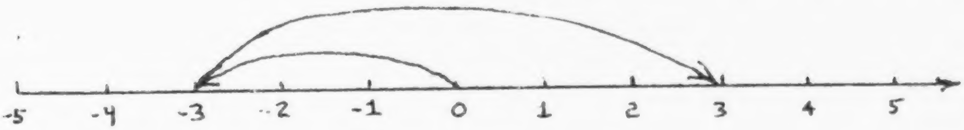
c. $\frac{5}{2} - \frac{4}{2} = \frac{1}{2}$

*d. $\frac{5}{2} - \frac{1}{2} = \frac{4}{2}$

Source: Addison-Wesley, Bk. 5, p. 238

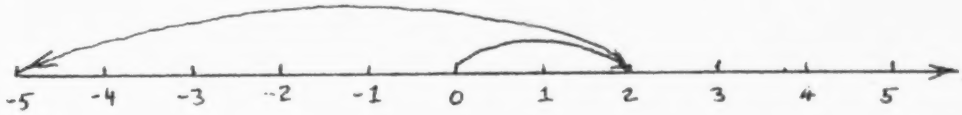
THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING THAT A NUMBER LINE CAN PORTRAY THE ADDITION OF POSITIVE AND NEGATIVE INTEGERS BY SELECTING AN EQUATION DEMONSTRATED ON A GIVEN NUMBER LINE. 0183

Directions: Analyze the following illustrations and select the equation described.


-5
-4
-3
-2
-1
0
1
2
3
4
5

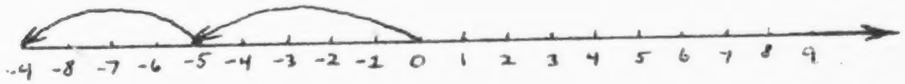
0132

a. −3 + 0 = 3
b. −3 + −3 = 3
*c. −3 + 6 = 3
d. −3 + −6 = 3


-5
-4
-3
-2
-1
0
1
2
3
4
5

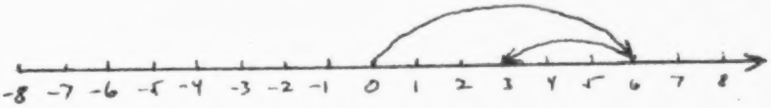
0133

*a. 2 + −7 = −5
b. 2 − −5 = −5
c. −5 + 2 = −5
d. −5 + 7 = −5


-9
-8
-7
-6
-5
-4
-3
-2
-1
0
1
2
3
4
5
6
7
8
9

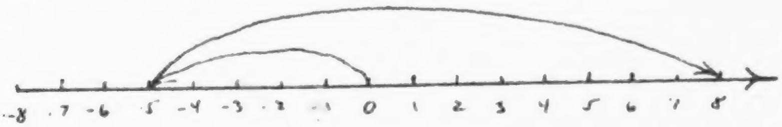
0134

a. −9 + 4 = −9
b. −9 + −4 = 9
c. −5 + −9 = 9
*d. −5 + −4 = −9


-8
-7
-6
-5
-4
-3
-2
-1
0
1
2
3
4
5
6
7
8

0135

a. 3 + 3 = 6
*b. 6 + −3 = 3
c. 3 + −3 = 6
d. 6 + 3 = 6

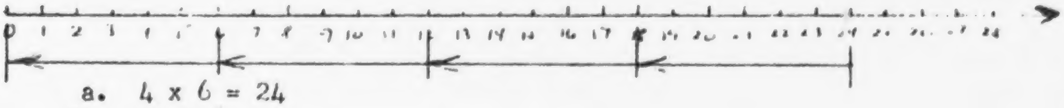

-8
-7
-6
-5
-4
-3
-2
-1
0
1
2
3
4
5
6
7
8

0136

a. 5 + 8 = 13
*b. −5 + 13 = 8
c. 8 + −5 = 13
d. −5 + −8 = 8

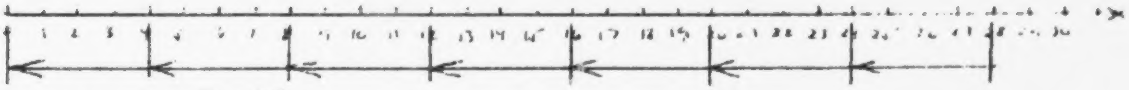
THE STUDENT WILL ANALYZE A NUMBER LINE SHOWING REPEATED SUBTRACTION IN RELATIONSHIP TO DIVISION BY CORRECTLY IDENTIFYING THE FORMULATED DIVISION EQUATION. 0200

Which number sentence below correctly illustrates the number line? 0137



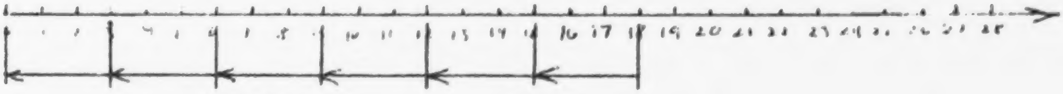
a. 4 x 6 = 24
*b. 24 ÷ 6 = 4
c. 24 ÷ 4 = 6

Which number sentence below correctly illustrates the number line? 0138



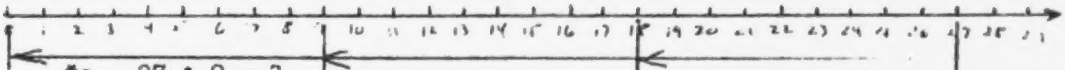
a. 4 x 7 = 28
b. 28 ÷ 7 = 4
*c. 28 ÷ 4 = 7

Which number sentence below correctly illustrates the number line? 0139



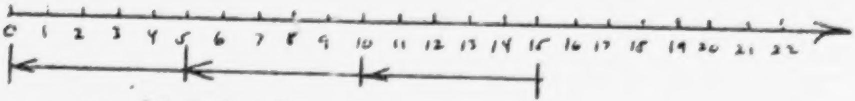
a. 3 x 6 = 18
*b. 18 ÷ 3 = 6
c. 18 ÷ 6 = 3

Which number sentence below correctly illustrates the number line? 0140



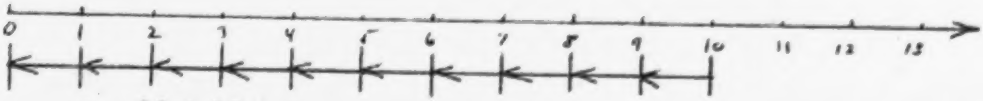
*a. 27 ÷ 9 = 3
b. 27 ÷ 3 = 9
c. 9 x 3 = 27

Which number sentence below correctly illustrates the number line? 0141


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

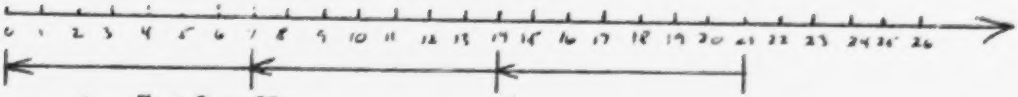
a. 15 ÷ 3 = 5
b. 5 x 3 = 15
*c. 15 ÷ 5 = 3

Which number sentence below correctly illustrates the number line? 0142


0 1 2 3 4 5 6 7 8 9 10 11 12 13

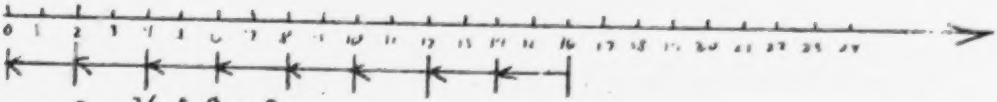
a. 10 ÷ 10 = 1
*b. 10 ÷ 1 = 10
c. 1 x 10 = 10

Which number sentence below correctly illustrates the number line? 0143


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26

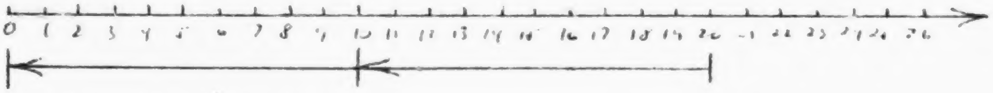
a. 7 x 3 = 21
b. 21 ÷ 3 = 7
*c. 21 ÷ 7 = 3

Which number sentence below correctly illustrates the number line? 0144


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

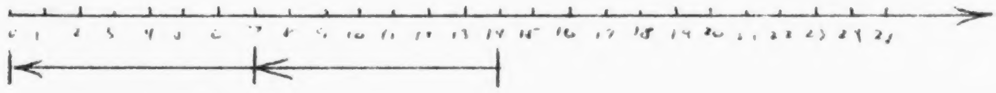
a. 16 ÷ 8 = 2
b. 2 x 8 = 16
*c. 16 ÷ 2 = 8

Which number sentence below correctly illustrates the number line? 0145


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26

*a. 20 ÷ 10 = 2
b. 20 ÷ 2 = 10
c. 2 x 10 = 20

Which number sentence below correctly illustrates the number line? 0146

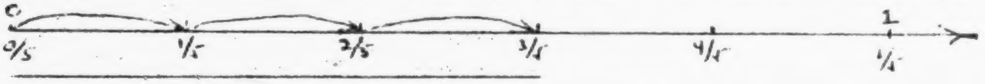

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

a. 2 x 7 = 14
*b. 14 ÷ 7 = 2
c. 14 ÷ 2 = 7

Source: Harcourt, Brace. Elementary Math, 5, p. 61.

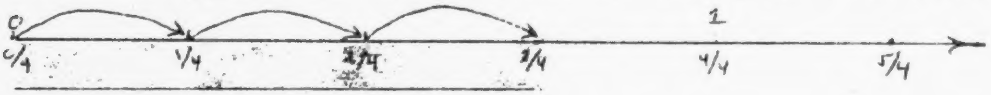
THE STUDENT WILL ANALYZE A NUMBER LINE SHOWING THE MULTIPLICATION OF FRACTIONS, BY IDENTIFYING THE CORRECT EQUATION. 0238

Circle the equation that correctly describes the number line below. 0147


0
0/5
1/5
2/5
3/5
4/5
1
5/5

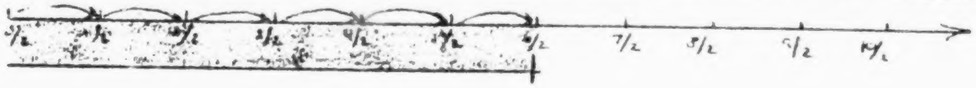
a. 1 x 3/5 = 3/5
*b. 3 x 1/5 = 3/5
c. 3 x 1 = 3/5

Circle the equation that correctly describes the number line below. 0148


0
0/4
1/4
2/4
3/4
1
4/4
5/4

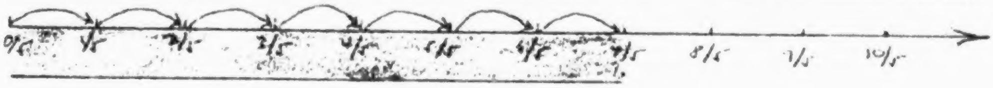
*a. 3 x 1/4 = 3/4
b. 3 x 3/4 = 3/4
c. 3 x 1 = 3/4

Circle the equation that correctly describes the number line below. 0149


0/2
1/2
2/2
3/2
4/2
5/2
6/2
7/2
8/2
9/2
10/2

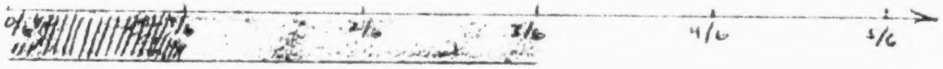
a. 6 x 1 = 6/2
*b. 6 x 1/2 = 6/2
c. 6 x 6/2 = 6/2

Circle the equation that correctly describes the number line below. 0150


0/5
1/5
2/5
3/5
4/5
5/5
6/5
7/5
8/5
9/5
10/5

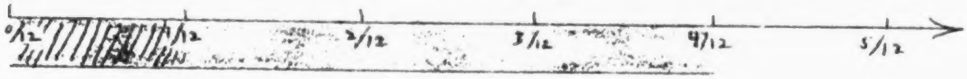
a. 1 x 7/5 = 7/5
b. 1/5 x 7 = 9/5
*c. 7 x 1/5 = 7/5

Circle the equation that correctly describes the number line below. 0151


0/6
1/6
2/6
3/6
4/6
5/6

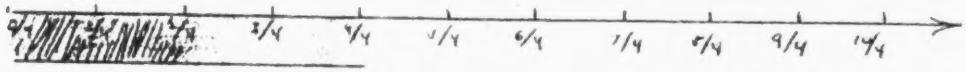
*a. 1/3 x 1/2 = 1/6
b. 3 x 1/6 = 3/6
c. 1/6 x 1/2 = 3/6

Circle the equation that correctly describes the number line below. 0152


0/12
1/12
2/12
3/12
4/12
5/12

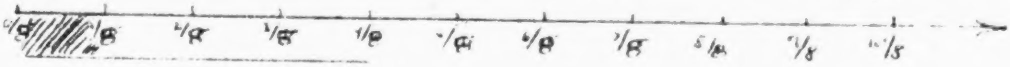
a. 1/3 x 1/4= 4/12
b. 1/4 x 1/3 = 1/3
*c. 1/4 x 1/3 = 1/12

Circle the equation that correctly describes the number line below. 0153


0/4
1/4
2/4
3/4
4/4
5/4
6/4
7/4
8/4
9/4
10/4

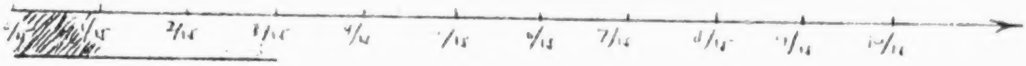
a. 1 x 1/2 = 1/4
*b. 1/2 x 1/2 = 1/4
c. 1/2 x 1/2 = 2/4

. Circle the equation that correctly describes the number line below. 0154


0/8
1/8
2/8
3/8
4/8
6/8
7/8
9/8
10/8

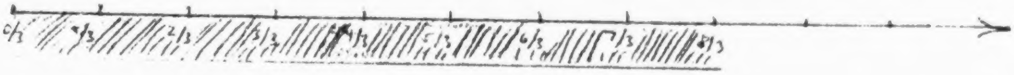
a. 1/2 x 1/4 = 4/8
b. 1/4 x 1/2 = 1/2
*c. 1/4 x 1/2 = 1/8

Circle the equation that correctly describes the number line below. 0155


1/15
2/15
3/15
4/15
6/15
7/15
8/15
9/15
10/15

*a. 1/3 x 1/5 = 1/15
b. 3 x 1/15 = 1/5
c. 3 x 1/15 = 3/15

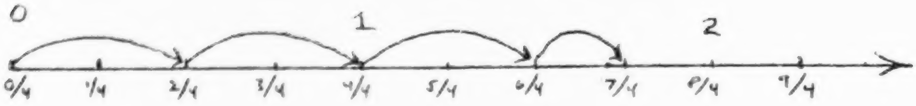
Circle the equation that correctly describes the number line below. 0156


0/3
1/3
2/3
3/3
4/3
5/3
6/3
7/3
8/3

*a. 8 x 1/3 = 8/3
b. 1 x 1/3 = 2 2/3
c. 2 x 1/3 = 8/3

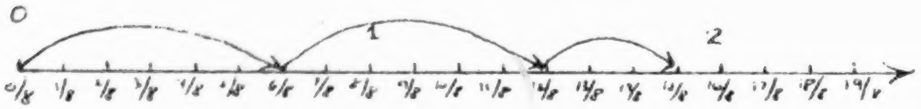
Source: Addison-Wesley, Elementary School Math 5, pp. 288, 289.

THE STUDENT WILL ANALYZE A NUMBER LINE SHOWING THE MULTIPLICATION OF A MIXED NUMBER TIMES A FRACTION BY CORRECTLY IDENTIFYING THE PRODUCT FROM A LIST. 0245


0
1
2
0/4
1/4
2/4
3/4
4/4
5/4
6/4
7/4
8/4
9/4

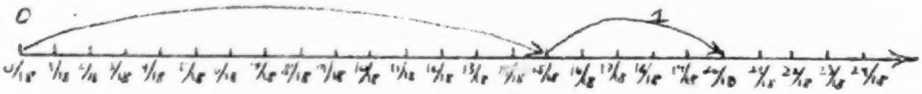
The number line above shows the equation $\frac{1}{2} \times 3\frac{1}{2} = N$. What is the product expressed as a mixed number? 0157

a. 7/4
*b. 1 3/4
c. 1 1/2


0
1
2
0/8
1/8
2/8
3/8
4/8
5/8
6/8
7/8
8/8
9/8
10/8
11/8
12/8
13/8
14/8
15/8
16/8
17/8
18/8
19/8

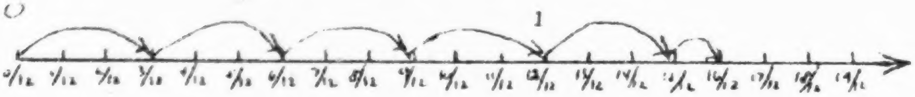
The number line above shows the equation 2 1/2 x 3/4 = N. What is the product expressed as a mixed number? 0158

*a. 1 7/8
b. 1 15/8
c. 2 1/2



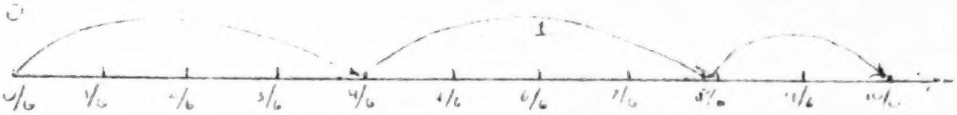
The number line above shows the equation 5/6 x 1 1/3 = N. What is the product expressed as a mixed number? 0159

a. 20/18
b. 1 2/18
*c. 1 1/9



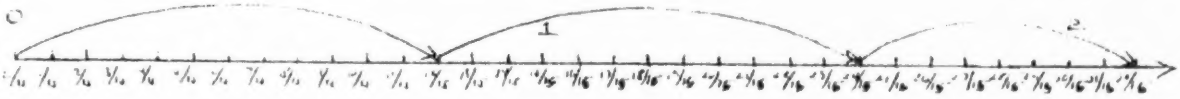
The number line above shows the equation 5/13 x 1/4 = N. What is the product expressed as a mixed number? 0160

*a. 1 1/3
b. 16/12
c. 1 16/12



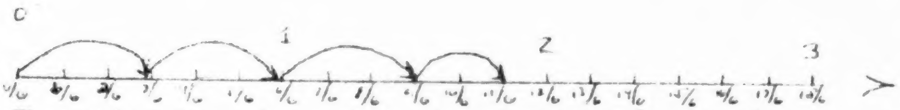
The number line above shows the equation 2/3 x 2 1/2 = N. What is the product expressed as a mixed number? 0161

a. 1 10/6
*b. 1 2/3
c. 1 4/6



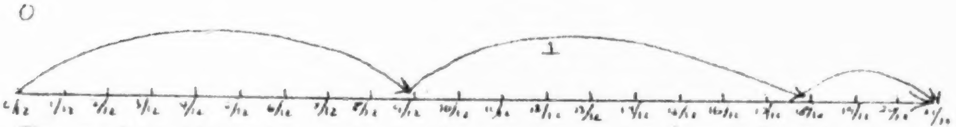
The number line above shows the equation 2 2/3 x 4/5 = N. What is the product expressed as a mixed number? 0162

*a. 2 2/15
b. 1 9/15
c. 2 32/15



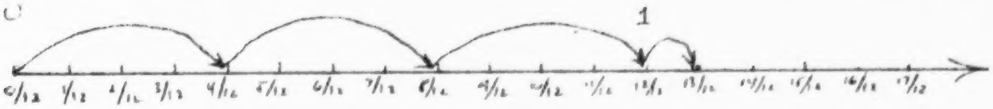
The number line above shows the equation 1/2 x 3 2/3 = N. What is the product expressed as a mixed number? 0163

a. 1 11/6
*b. 1 5/6
c. 1 11/6



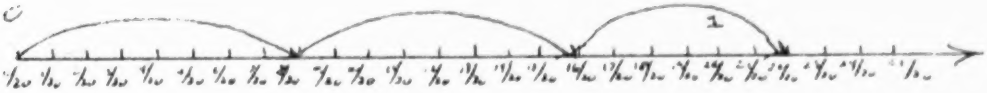
The number line above shows the equation 2 1/3 x 1/4 = N. What is the product expressed as a mixed number? 0164

a. 2 3/12
b. 1 9/12
*c. 1 3/4


0
1
0/12
1/12
2/12
3/12
4/12
5/12
6/12
7/12
8/12
9/12
10/12
11/12
12/12
13/12
14/12
15/12
16/12
17/12

The number line above shows the equation 3 1/4 x 1/3 = N. What is the product expressed as a mixed number? 0165

*a. 1 1/12
b. 1 13/12
c. 3 13/12



The number line above shows the equation 2/5 x 2 3/4 = N. What is the product expressed as a mixed number? 0166

a. 2 6/20
b. 3 2/20
*c. 1 1/10

Source: Merrill, Discovering Math 5, p. 314

THE STUDENT WILL APPLY HIS KNOWLEDGE OF THE NUMBER LINE BY IDENTIFYING THE RELATIONSHIP BETWEEN TWO GIVEN NUMBERS. 0261

Directions: Circle the correct alternative.

20 is to the right of 17 on the number line: 0167

*a. $20 > 17$
b. $20 < 17$
c. $20 = 17$

10 is to the left of 15 on the number line: 0168

a. $10 > 15$
*b. $15 > 10$
c. $10 = 15$

X is to the right of y on the number line: 0169

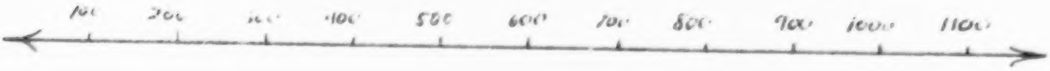
a. $x = y$
*b. $x > y$
c. $x < y$

$25 > 12$ 0170

*a. 12 is to the left of 25 on the number line
b. 12 is at the same point as 25 on the number line
c. 25 is to the left of 12 on the number line

$30 < 50$ 0171

*a. 50 is to the right of 30 on the number line
b. 30 is to the right of 30 on the number line
c. 50 is to the left of 30 on the number line



The number that is 500 greater than 100 0172

a. 400
b. 500
*c. 600

The number between 600 and 800 is 0173

a. 500
*b. 700
c. 900

The number that is 200 less than 300 is 0174

*a. 100
b. 400
c. 500

The number that is 200 less than 800 is 0175

a. 1000
b. 400
*c. 600

The number that is 400 greater than 100 is 0176

a. 300
*b. 500
c. 400

Source: Houghton Mifflin, p. 40-41.

INEQUALITIES

THE STUDENT WILL APPLY HIS KNOWLEDGE OF INEQUALITIES BY SOLVING PROBLEMS AND SELECTING THE ANSWER FROM A LIST OF POSSIBILITIES. 0132

Directions: Answer the problems using inequalities, circle the correct answer.

100 greater than 36 is 0177

a. 360
b. 3600
*c. 136
d. 163

The number 100,000 greater than 837,645,246 is 0178

a. 837,646,264
*b. 837,745,264
c. 838,645,264
d. 837,655,264

Which of the following is true 0179

a. $653,804 < 653,084$
*b. $653,804 > 653,084$
c. $653,804 = 653,084$

The number 1,000,000 less 348,637,486 is 0180

a. 348,627,486
b. 338,637,486
c. 349,637,486
*d. 347,637,486

THE STUDENT WILL RECALL THE MEANING OF THE SIGNS GREATER THAN, LESS THAN, EQUAL TO BY IDENTIFYING THE CORRECTLY EXPRESSED NUMBER SENTENCE. 0273

Directions: Place an x in front of the correct alternative.

$2/4 + 1/4 = 3/4$ 0181

a. $1/4 > 3/4$
b. $1/4 = 3/4$
*c. $1/4 < 3/4$

$5/8 + 2/8 = 7/8$ 0182

a. $5/8 > 7/8$
b. $7/8 < 5/8$
*c. $5/8 < 7/8$

$3/9 + 2/9 = 5/9$ 0183

*a. $5/9 > 2/9$
b. $2/9 > 5/9$
c. $3/9 = 2/9$

$3/7 + 2/7 + 5/7$ 0184

*a. $2/7 < 5/7$
b. $2/7 > 3/7$
c. $5/7 < 3/7$

$3/5 + 1/5 = 4/5$ 0185

a. $4/5 < 3/5$
*b. $3/5 > 1/5$
c. $3/5 = 1/5$

$1/7 + 1/7 = 2/7$ 0186

*a. $1/7 = 1/7$
b. $2/7 < 1/7$
c. $2/7 = 1/7$

$3/8 + 4/8 = 7/8$ 0187

a. $7/8 = 8/8$
b. $3/8 > 4/8$
*c. $4/8 > 3/8$

$4/9 + 1/9 = 5/9$ 0188

a. $1/9 > 5/9$
*b. $1/9 < 4/9$
c. $1/9 > 4/9$

$1/12 + 2/12 = 3/12$ 0189

*a. $2/12 < 3/12$
b. $3/12 < 1/12$
c. $1/12 > 2/12$

$3/10 + 2/10 = 5/10$ 0190

a. $5/10 < 2/10$
*b. $5/10 > 3/10$
c. $5/10 < 3/10$

Source: Houghton Mifflin, p. 300.

EXPONENTIAL NOTATION

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF EXPONENTIAL NOTATION BY WRITING THE MULTIPLES OF TEN IN EXPONENTIAL NOTATION. 0004

The following series of numbers may be expressed in exponential notation. Select the lettered row below which gives the correct scientific notation for the given series. In the particular order as given. (Hint: Write scientific notations of the numbers given first). 0191

1,000,000
1,000
0.1
100
0.01
10
1
0.001

a. 10^6 , 10^{-1} , 10^3 , 10^{-2} , 10^2 , 10^0 , 10^1 , 10^{-3}
b. 10^6 , 10^1 , 10^3 , 10^2 , 10^0 , 10^{-1} , 10^{-2} , 10^{-3}
*c. 10^6 , 10^3 , 10^{-1} , 10^2 , 10^{-2} , 10^1 , 10^0 , 10^{-3}
d. 10^6 , 10^2 , 10^3 , 10^1 , 10^0 , 10^{-1} , 10^{-2} , 10^{-3}

The following series of numbers may be expressed in exponential notation. Select the lettered row below which gives the correct scientific notation for the given series, in the particular order given. 0192

100,000
0.0001
10,000
0.00001

a. 10^{-5} , 10^{-4} , 10^4 , 10^5
*b. 10^5 , 10^{-4} , 10^4 , 10^{-5}
c. 10^5 , 10^4 , 10^{-4} , 10^{-5}
d. 10^6 , 10^{-5} , 10^{-4} , 10^4

Source: Terms, Tables, Skills, Ch. 2.

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF THE POWERS OF TEN BY TRANSLATING THE NUMBER OF DIGITS AFTER THE DECIMAL POINT INTO POWERS OF TEN. 0009

The number 1234 may be written as 0193

a. 12.34×10^3
b. 123.4×10^3
*c. 1.234×10^3

Source: Elementary School Mathematics #4, 2nd Ed., Addison-Wesley, Ch. 5.
"Peas and Particles" Elementary Science Study, Webster, McGraw-Hill

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF THE PROCESS OF INTERPOLATION BY INTERPOLATING THE RELATIVE VALUE OF THE EXPONENT OF A GIVEN NUMBER BETWEEN ANY TWO POWERS OF TEN. 0013

If a number between 100 and 1000 is to be written in exponential notation, the exponent for the powers of ten would be 0194

a. greater than 2 and greater than 3
b. less than 2 and less than 3
*c. greater than 2 and less than 3

Source: Elementary School Mathematics #4, 2nd Ed., Addison-Wesley, Ch. 5
Holt, Rinehart, and Winston, Elementary Math Series, 4th-8th
Elementary School Mathematics #6, 2nd Ed., Addison-Wesley
"Peas and Particles" Elementary Science Study, Webster, McGraw-Hill

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF EXPONENTS BY SOLVING PROBLEMS INVOLVING EXPONENTS, RE-STATING NUMBERS INTO A FORM WITH EXPONENTS AND TRANSLATING NUMBERS INTO SCIENTIFIC NOTATION. 0061

$1 \times 1 = 1$

$1 + 3 = 2 \times 2 = 4$

How many more 1 unit squares must be added to again have a square? 0195

a. 3
b. 4
*c. 5
d. 6

A square with 5 units on each side will have how many units in all? 0196

a. 10
b. 15
c. 20
*d. 25

10 is one unit of 10 or we can write 10^1 (ten to the first power). 10^2 means ten to the second power or 10×10 or 100. 10^3 means 0197

a. $10 + 10 + 10$
*b. $10 \times 10 \times 10$
c. $100 + 10$
d. $1 \times 0 \times 0 \times 0$

A number times itself gives us the square of that number. We use the exponent 2 to tell us to square a number. $3^2 = 3 \times 3$ or 9. Which of these statements is not true? 0198

a. $4^2 = 16$
b. $15^2 = 15 \times 15$
c. $11^2 = 121$
*d. $7^2 = 14$

An exponent helps us to give an abbreviated form of a large number 0199

$4 \times 10 \times 10 \times 10 = 4 \times 10^3$

The number 6,000,000 is shortened to $6 \times 10^?$

a. 4
b. 5
*c. 6
d. 7

73×10^4 is equal to 0200

a. 7300
b. 73000
*c. 730000
d. 7300000

61×10^2 is equal to 0201

a. 61
b. 610
*c. 6100
d. 61000

53×10^7 is equal to 0202

a. 5300000
b. 53000000
*c. 530000000
d. 5300000000

Expanded notation tells us how many in each place. The shortened form or the standard numeral for $7 \times 10^4 + 6 \times 10^3 \times 0 \times 10^2 + 9 \times 10$ is 0203

*a. 76090
b. 76190
c. 76009
d. 76109

The standard numeral for $8 \times 10^5 + 7 \times 10^3 + 9 \times 10^2 + 0 \times 10 + 7$ is 0204

a. 87907
*b. 807907
c. 87097
d. 807097

$6 \times 10^4 + 3 \times 10^3 + 0 \times 10^2 + 4 \times 10 + 3$ is an expanded numeral for 0205

a. 603043
b. 63003
c. 63413
*d. 63043

$2 \times 2 \times 2 \times 2 \times 2 = 2^n$ 0206

n =

*a. 5
b. 4
c. 3
d. 2

$2^3 + 3^2 = n$ 0207

n =

a. 10
b. 12
c. 13
*d. 17

$2^2 \times 10^4 = n$ 0208

n =

a. 400
b. 44
c. 4040
*d. 40000

The fourth power of 2 is 0209

a. 8
*b. 16
c. 6
d. 20

$6^3 = 6^1 \times 6^2 = 6 \times$ ________ 0210

a. 12
b. 18
c. 24
*d. 36

$4^4 = 4^2 \times 4^2 =$ ______ x ______ 0211

a. 8 x 8
b. 8 + 8
*c. 16 x 16
d. 40 x 40

$3 \times 10^3 \times 4 \times 10^2 =$ 0212

a. 12×10^6
*b. 12×10^5
c. $12^6 \times 10^1$
d. 8×10^1

$2 \times 10^4 \times 4 \times 10^3 =$ 0213

*a. 8×10^7
b. 8×10^{12}
c. 8×10^9
d. 8×10^1

$3^2 \times 3^5 = 3^n$ 0214

n = a. 5
b. 6
*c. 7
d. 10

$3^1 \times 3^3 =$ 0215

a. 9
b. 27
*c. 81
d. 243

$2^1 \times 3^1 \times 5^1 =$ 0216

a. 11
*b. 30
c. 60
d. 100

$29^1 \times 2^1 =$ 0217

a. 31
b. 292
c. 33
*d. 58

$43^1 \times 2^1 \times 4$ 0218

a. 86
b. 49
*c. 344
d. 46

$10^4 \times 8^2$ 0219

a. 16000
b. 16,000,000
c. 64,000,000
*d. 640,000

$2^3 \times 7^1 =$ 0220

a. 13
b. 42
c. 21
*d. 56

$4^2 \times 1^3 \times 2^3 =$ 0221

a. 64
b. 32
*c. 128
d. 144

A product can be expressed as factors to their powers. 0222

$20 = 2^2 \times 5$

$40 = 2^n \times 5$

n =

*a. 3
b. 4
c. 5
d. 6

The product 45 has 2 factors. They are 0223

*a. 5×3^2
b. 5×3^3
c. 5×3^1
d. 5×3^4

The product 64 is equal to 2 to which power? 0224

a. eighth
*b. sixth
c. fifth
d. fourth

100 is equal to 10^2 or 0225

a. $5^2 \times 10$
b. $5^2 \times 2^1$
*c. $5^2 \times 2^2$
d. $5^2 \times 10^2$

144 is the product of 12 x 12 or 0226

a. $3^2 \times 4^2$
b. $6^2 \times 2^2$
c. $2^4 \times 3$
*d. $2^4 \times 3^2$

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF SCIENTIFIC NOTATION BY TRANSLATING A GIVEN NUMBER INTO A NUMBER WRITTEN AS A NUMBER BETWEEN ONE AND TEN, TIMES A POWER OF TEN. 0010

Number	Number Between 1 and 10	Power of 10
672	________	10^2
4378	4.378	______

If the accompanying table is correctly completed, the blanks will be filled in with 0227

a. 6.72 and 10^4
b. 67.2 and 10^3
*c. 6.72 and 10^3

Elementary School Mathematics #4, 2nd Ed., Addison-Wesley, Ch. 5
"Peas and Particles" Elementary Science Study, Webster, McGraw-Hill

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF SCIENTIFIC NOTATION BY TRANSLATING ANY GIVEN NUMBER (BASE 10) TO THE CORRECT SCIENTIFIC OR EXPONENTIAL NOTATION. 0011

The correct scientific notations for the numbers (in the base 10) 1560 and 788 are 0228

*a. 1.560×10^3 and 7.88×10^2
b. 15.60×10^1 and 7.88×10^1
c. 0.1560×10^2 and 78.8×10^0
d. 156.0×10^3 and 7.88×10^2

The correct scientific notations for the numbers (the base 10) 0.104 and 0.00398 are 0229

a. 1.04×10^{-1} and 3.98×10^3
b. $1.04 \times 10^{+1}$ and 3.98×10^{-3}
c. 1.04×10^{-2} and 3.98×10^3
*d. 1.04×10^{-1} and 3.98×10^{-3}

Terms, Tables, and Skills, Woodruff-Silver Burdett, Ch. 2.

FRACTIONS

THE STUDENT KNOWS THE MEANING OF FRACTIONAL NUMBERS BY CONVEYING THAT MEANING THROUGH THE USE OF SETS. 0064

Numerals for fractional numbers are 0230

a. whole numbers
*b. fractions
c. counting numbers
d. cardinal numbers

When we compare a subset of a set with that set we can use 0231

a. whole numbers
b. counting numbers
*c. fractional numbers
d. cardinal numbers

$[a, b, c, d] \supset [a, b]$ 0232

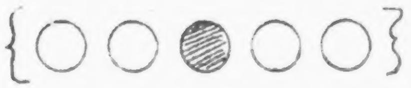
The cardinal numbers for the set and its subset show the relationship of

*a. $\frac{2}{4}$
b. $\frac{4}{2}$
c. $\frac{3}{4}$
d. $\frac{2}{3}$

{□} ⊂ {○ △ D □} 0233

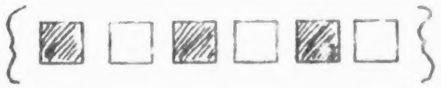
The relationship shown is

a. $\frac{4}{1}$
b. $\frac{1}{5}$
c. $4 - 1$
*d. $\frac{1}{4}$

 0234

Which choice describes the colored circle in the set?

- a. the middle circle
- b. one is colored
- *c. one-fifth is colored
- d. four aren't colored

 0235

The best description of the colored blocks in the set is

- a. every other one
- b. half of the set
- *c. three-sixths
- d. three of them

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF FRACTIONS BY COMPARING THE FRACTION NAMED TO THE TOTAL REGION TO STATE TWO FRACTIONS AND STATING THE MEANING OF THE TERMS NUMERATOR AND DENOMINATOR. 0067

Denominators are always _________ . 0236

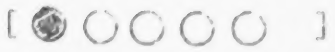
- *a. counting numbers
- b. whole numbers
- c. fractional numbers

The denominator names the ____________. 0237

- a. subset
- *b. set
- c. cardinal number
- d. fraction

The numerator is a ___________. 0238

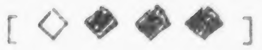
- a. fraction
- *b. whole number
- c. counting number
- d. set



0239

the numerator for the colored part of the set is

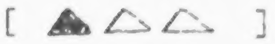
*a. 1
b. 4
c. 5



0240

The denominator for the colored part of the set is

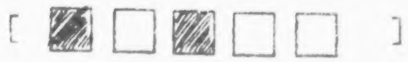
a. 1
b. 3
*c. 4



0241

$\frac{1}{3}$ of the region is colored, the rest of the region is ________.

a. $\frac{1}{3}$
*b. $\frac{2}{3}$
c. $\frac{3}{3}$



0242

$\frac{2}{5}$ are colored. _________ are not colored.

a. $\frac{1}{5}$
b. $\frac{2}{5}$
*c. $\frac{3}{5}$
d. $\frac{4}{5}$
e. $\frac{5}{5}$

GIVEN A LIST OF EQUATIONS THE STUDENT WILL ANALYZE THEM TO SELECT THE ASSUMPTION THAT A NUMBER MULTIPLIED BY A PROPER FRACTION EQUALS A PRODUCT LESS THAN THE ORIGINAL NUMBER. 0186

Directions: Analyze the following equations and then select the assumption which would apply.

4 x 8 = 32
1 x 8 = 8
½ x 8 = 4

4 x 9 = 36
2 x 9 = 18
1/3 x 9 = 3

4 x 6 = 24
2 x 6 = 12
1/6 x 6 = 1 0243

6 x 12 = 72
2 x 12 = 24
¼ x 12 = 3

5 x 20 = 100
2 x 20 = 40
1/5 x 20 = 4

8 x 18 = 144
2 x 18 = 36
1/6 x 18 = 3

a. If you multiply a number by a proper fraction the product will be less than one.
b. If you multiply a number by a proper fraction the product will be greater than the original number.
c. If the product is greater than one you have multiplied a number by a proper fraction.
*d. If the product is less than the original number you have multiplied by a proper fraction.

THE CHILD WILL DEMONSTRATE HIS UNDERSTANDING OF FRACTIONAL PARTS BY IDENTIFYING DIFFERENT FRACTIONAL PARTS. 0092

Directions: Match the picture with the fraction that identifies the shaded part.

a. $\frac{3}{9}$

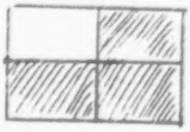
b. $\frac{1}{4}$

c. $\frac{1}{3}$

d. $\frac{3}{4}$

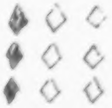
c. $\frac{2}{3}$

d



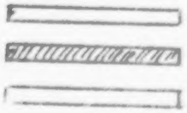
0244

a



0245

c



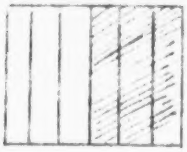
0246

f. $\frac{3}{6}$

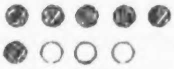
g. $\frac{2}{5}$

h. $\frac{6}{9}$

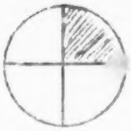
f ____ 0247



h ____ 0248



b ____ 0249



Source: Addison-Wesley, Bk. 5, pp. 186-187.

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF THE DIFFERENCE BETWEEN NUMERATORS AND DENOMINATORS BY IDENTIFYING THEM. 0096

Directions: Using the given fractions; if the number given is a numerator cross out the N, if the number given is a denominator cross out the D.

1/2, 7/9, 3/5, 6/8, 4/12, 10/11

a.	N	~~D~~	8	0250
b.	N	~~D~~	9	0251
c.	~~N~~	D	3	0252
d.	~~N~~	D	6	0253
e.	~~N~~	D	7	0254
f.	N	~~D~~	5	0255
g.	N	~~D~~	11	0256
h.	N	~~D~~	12	0257
i.	~~N~~	D	10	0258
j.	~~N~~	D	1	0259

9/13

a.	~~N~~	D	9	0260
b.	N	~~D~~	13	0261

14/25

a.	N	~~D~~	25	0262
b.	~~N~~	D	14	0263

23/11

a. N ~~D~~ 11 0264
b. ~~N~~ D 23 0265

5/4

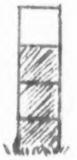
a. ~~N~~ D 5 0266
b. N ~~D~~ 4 0267

6 2/3

a. ~~N~~ D 2 0268
b. N ~~D~~ 3 0269

THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF THE RELATIONSHIP BETWEEN NUMERATORS AND DENOMINATORS BY DESCRIBING THIS RELATIONSHIP. 0097

Directions: Look at the figures then select the correct response..



How many parts is the post divided into? 0270

a. 1
b. 2
c. 3
*d. 4

The number of the fraction which tells how many parts the post is divided into will be 0271

a. 1
b. 2
c. 3
*d. 4

The denominator of the fraction describing the part of the post not painted is 0272

a. 1
b. 2
c. 3
*d. 4

How many parts of the post are painted? 0273

a. 1
b. 2
*c. 3
d. 4

The number of the fraction telling how many of the parts of the post are painted is 0274

a. 1
b. 2
*c. 3
d. 4

The numerator of the fraction telling how many parts of the post are painted is 0275

a. 1
b. 2
*c. 3
d. 4

The numerator of the fraction telling how much of the post isn't painted is 0276

*a. 1
b. 2
c. 3
d. 4

Which fraction identifies the whole post? 0277

a. 1/4
b. 2/4
c. 3/4
*d. 4/4

Which fraction identifies the painted part of the post? 0278

a. 1/4
b. 2/4
*c. 3/4
d. 4/4

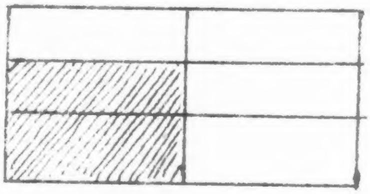
Which fraction identifies the non-painted part of the post? 0279

*a. 1/4
b. 2/4
c. 3/4
d. 4/4

Source: Addison-Wesley, Bk. 5, p. 191.

GIVEN A DIAGRAM OF FRACTIONS, THE STUDENT WILL APPLY HIS KNOWLEDGE OF FRACTIONS BY CORRECTLY SELECTING THE FRACTION WHICH CORRESPONDS TO EACH DIAGRAM. 0147

Directions: Select the fraction that is shown in each diagram.

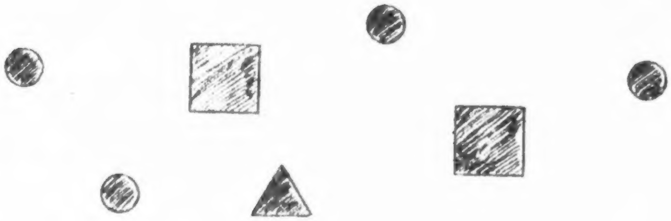


What fraction of the area is shaded? 0280

a. 4/6
b. 2/8
*c. 2/6
d. 2/5

What fraction of the area is not shaded? 0281

a. 2/6
*b. 4/6
c. 1/3
d. 3/4



What fraction of the figures are circles? 0282

a. 4/4
b. 3/7
c. 2/7
*d. 4/7

What fraction of the figures are geometric shapes? 0283

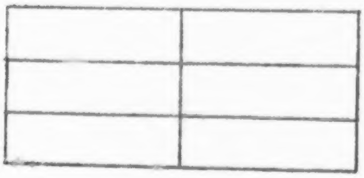
a. 3/7
*b. 7/7
c. 4/7
d. 2/7

The numerator tells how many parts 0284

*a. are shaded
b. in all
c. not shaded

The denominator tells how many parts 0285

a. are not shaded
*b. in all
c. are shaded



What fraction of the area is shaded? 0285

a. 6/6
b. 1/2
c. 0/5
*d. 0/6

Source: Addison Wesley

THE STUDENT WILL DEMONSTRATE UNDERSTANDING OF THE RELATIONSHIP BETWEEN WHOLE NUMBERS AND FRACTIONS EITHER BY EXPRESSING WHOLE NUMBERS AS FRACTIONS OR FRACTIONS AS WHOLE NUMBERS. 0149

Directions: Express the following fractions as whole numbers.

15/5 0286

a. 5
b. 1
*c. 3
d. 4

12/4 0287

*a. 3
b. 4
c. 6
d. 2

20/5

0288

a. 5
*b. 4
c. 10
d. 2

9/1

0289

a. 1
b. 18
*c. 9
d. 3

4/4

0290

a. 4
b. 2
c. 0
*d. 1

635/5

0291

a. 300
b. 35
*c. 127
d. 101

412/4

0292

*a. 103
b. 104
c. 43
d. 164

Directions: Express the following whole numbers as fractions.

4 0293

a. 12/4
*b. 20/5
c. 100/20
d. 32/2

3 0294

*a. 27/9
b. 24/6
c. 30/15
d. 42/3

6 0295

a. 36/4
b. 42/2
*c. 6/1
d. 12/3

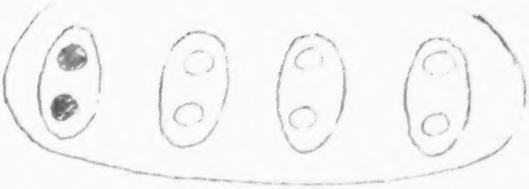
15 0296

a. 45/9
*b. 60/4
c. 30/3
d. 100/4

12 0297

a. 36/4
b. 24/1
c. 12/2
*d. 24/2

THE STUDENT KNOWS FOR EVERY FRACTIONAL NUMBER THERE IS A SET OF EQUIVALENT FRACTIONS BY SELECTING EQUIVALENT FRACTIONS FOR A GIVEN FRACTION. 0069



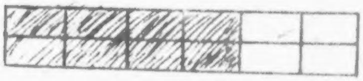
$\frac{1}{4}$ is one fraction for a subset of the whole. Another subset equivalent to $\frac{1}{4}$ is 0298

a. $\frac{1}{2}$

b. $\frac{3}{4}$

*c. $\frac{2}{8}$

d. $\frac{6}{8}$



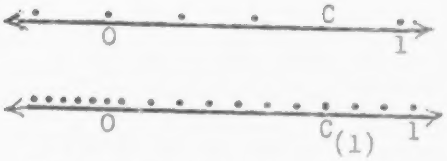
$\frac{4}{6}$ is colored. An equivalent fraction of it is 0299

a. $\frac{1}{3}$

b. $\frac{1}{2}$

c. $\frac{4}{12}$

*d. $\frac{8}{12}$



The equivalent for C and $C_{(1)}$ are 0300

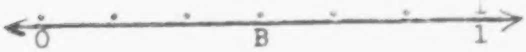
a. $\frac{2}{3}$, $\frac{3}{6}$

*b. $\frac{3}{4}$, $\frac{6}{8}$

c. $\frac{3}{4}$, $\frac{7}{8}$

d. $\frac{6}{8}$, $\frac{10}{12}$

The set of equivalent fractions for point B is 0301



a. $\frac{1}{3}$, $\frac{2}{6}$, $\frac{3}{9}$, $\frac{4}{12}$
b. $\frac{2}{3}$, $\frac{4}{6}$, $\frac{8}{12}$, $\frac{12}{24}$
*c. $\frac{3}{6}$, $\frac{6}{12}$, $\frac{9}{18}$, $\frac{12}{24}$
d. $\frac{1}{2}$, $\frac{2}{4}$, $\frac{4}{8}$, $\frac{8}{10}$

Directions: Match the equivalent fraction in Column II with the right fraction in Column I.

Column I

d $\frac{2}{3}$

e $\frac{5}{6}$

a $\frac{1}{2}$

b $\frac{3}{4}$

Column II

a. $\left\{\frac{3}{6}, \frac{4}{8}, \frac{5}{10}\right\}$ 0302
b. $\left\{\frac{6}{8}, \frac{9}{12}, \frac{12}{16}\right\}$
c. $\left\{\frac{4}{6}, \frac{6}{9}, \frac{8}{18}\right\}$
d. $\left\{\frac{4}{6}, \frac{6}{9}, \frac{8}{12}\right\}$ 0303
e. $\left\{\frac{10}{12}, \frac{15}{18}, \frac{20}{24}\right\}$

0304

A set of equivalent fractions can be developed by multiplying by fractions in which the numerator and denominator are ________. 0306

a. opposite to each other.
b. unequal to each other.
*c. equal to each other.
d. equivalent to each other.

The smallest fraction in a set of equivalent fractions is easily found by dividing by fractions that are 0307

a. the same as the fraction
*b. equivalent to one
c. smallest you know
d. opposite of the fraction

Directions: Match the lowest fraction of a set of equivalent fractions to one of its equivalents.

Column I	Column II	
b $\frac{1}{4}$	a. $\frac{12}{30}$	0308
	b. $\frac{12}{48}$	
f $\frac{4}{5}$	c. $\frac{15}{20}$	0309
	d. $\frac{8}{12}$	
	e. 14	
c $\frac{3}{4}$	f. $\frac{32}{40}$	0310
d $\frac{2}{3}$		0311

THE CHILD WILL USE HIS KNOWLEDGE OF FRACTIONS SETS IN SELECTING FRACTIONS THAT ARE EQUIVALENT. 0093

Directions: Select the alternate that is eqivalent to the lead.

$\frac{1}{2}$ = 0312

a. $\frac{2}{3}$
*b. $\frac{2}{4}$
c. $\frac{3}{5}$
d. $\frac{4}{7}$

$\frac{2}{3}$ = 0313

a. $\frac{4}{7}$
b. $\frac{8}{11}$
c. $\frac{17}{24}$
*d. $\frac{10}{15}$

$\frac{5}{8}$ = 0314

*a. $\frac{25}{40}$
b. $\frac{36}{49}$
c. $\frac{10}{17}$
d. $\frac{40}{63}$

$\frac{8}{10}$ = 0315

a. $\frac{16}{24}$
b. $\frac{24}{32}$
*c. $\frac{4}{5}$
d. $\frac{2}{3}$

$\frac{14}{21} =$ 0316

a. $\frac{3}{7}$
b. $\frac{7}{15}$
c. $\frac{3}{5}$
*d. $\frac{2}{3}$

$\frac{5}{12} =$ 0317

*a. $\frac{20}{48}$
b. $\frac{1}{2}$
c. $\frac{10}{25}$
d. $\frac{54}{100}$

$\frac{4}{9} =$ 0318

a. $\frac{7}{18}$
b. $\frac{9}{19}$
*c. $\frac{8}{18}$
d. $\frac{8}{19}$

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF BUILDING SETS OF EQUIVALENT FRACTIONS BY SELECTING FRACTIONS TO CONTINUE EQUIVALENT SETS. 0099

Directions: Choose the alternative that continues the equivalent set.

[2/3, 4/6, 6/9, ...] 0319

a. 12/18, 24/36, 48/72
b. 8/12, 14/20, 20/28
c. 12/15, 18/24, 24/30
*d. 8/12, 10/15, 12/18

[1/4, 2/8, 3/12, ...] 0320

a. 4/15, 5/20, 6/25
*b. 4/16, 5/20, 6/24
c. 6/15, 7/23, 8/28
d. 4/16, 6/24, 7/28

[4/5, 8/10, 12/15, ...] 0321

*a. 16/20, 20/25, 24/30
b. 18/20, 24/25, 32/30
c. 24/30, 30/35, 35/40
d. 16/25, 20/30, 24/35

Directions: Choose the set that builds the given fraction.

_e_ 3/10 0322

_c_ 5/40 0323

_d_ 7/21 0324

_f_ 21/30 0325

_b_ 3/5 0326

a. 10/80, 15/120, 20/160, 25/200
b. 6/10, 9/15, 12/20, 15/25
c. 6/48, 7/56, 8/64, 9/72
d. 8/24, 9/27, 10/30, 11/33
e. 6/20, 9/30, 12/40, 15/50
f. 28/40, 35/50, 42/60, 49/70
g. 6/20, 12/30, 18/40, 24/50

__c__ 0/1 0327

__b__ 2/1 0328

__d__ 1/2 0329

__f__ 3/4 0330

__a__ 4/3 0331

a. 8/6, 12/9, 15/12, 18/15
b. 4/2, 6/3, 8/4, 10/5
c. 0/2, 0/3, 0/4, 0/5
d. 2/4, 3/6, 4/8, 5/10
e. 1/0, 2/0, 3/0, 4/0
f. 6/8, 9/12, 12/15, 15/18
g. 3/1, 4/1, 5/1, 6/1

Source: Addison-Wesley, Bk. 5, pp. 199, 201.

THE STUDENT WILL ANALYZE STATEMENTS RELATED TO FRACTIONAL EQUIVALENCY TO INDICATE WHETHER THE GIVEN STATEMENTS ARE ASSUMED OR UNASSUMED. 0109

Directions: After reading the given equation choose the correct item. If the statement can be assumed from the given equation circle the S; if the statement is unassumed circle the U.

8/10 > 5/10

6/10 > 5/10 [✓ S] U 0332

7/8 > 5/10 S [✓ U] 0333

5/10 < 7/10 [✓ S] U 0334

9/10 > 5/10 ~~S~~ U 0335

4/5 > 1/2 ~~S~~ U 0336

3/12 < 4/12

3/12 < 7/12 ~~S~~ U 0337

3/12 < 1/3 ~~S~~ U 0338

1/4 < 4/12 ~~S~~ U 0339

3/12 < 1/8 S ~~U~~ 0340

1/2 < 4/12 S ~~U~~ 0341

9/18 > 8/18

9/18 > 4/5 S ~~U~~ 0342

1/2 > 8/18 ~~S~~ U 0343

5/6 > 8/18 S ~~U~~ 0344

9/18 > 7/18 ~~S~~ U 0345

1/2 > 4/9 ~~S~~ U 0346

3/5 = 15/25

3/5 > 14/25 ~~S~~ U 0347

2/5 < 15/25 ~~S~~ U 0348

3/5 < 27/38 S ~~U~~ 0349

3/5 = 6/10 ~~S~~ U 0350

15/25 = 6/10 ~~S~~ U 0351

4/7 < 2/3

4/7 = 2/3 S ~~U~~ 0352

8/14 < 2/3 ~~S~~ U 0353

2/3 > 4/7 ~~S~~ U 0354

1/3 > 4/7 S ~~U~~ 0355

3/3 > 4/7 ~~S~~ U 0356

Source: Addison-Wesley, Bk. 5, pp. 226-227

THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF EQUIVALENT FRACTIONS BY SELECTING THE SET OF FRACTIONS WHICH IS EQUIVALENT TO A GIVEN FRACTION. 0144

Directions: Given a fraction, circle the set of fractions which is equivalent.

$\frac{1}{4}$ 0357

a. $\left\{\frac{1}{4}, \frac{2}{4}, \frac{3}{4}, \frac{4}{4}\ldots\right\}$
*b. $\left\{\frac{1}{4}, \frac{2}{8}, \frac{3}{12}, \frac{4}{16}\ldots\right\}$
c. $\left\{\frac{1}{4}, \frac{1}{5}, \frac{1}{6}, \frac{1}{7}\ldots\right\}$
d. $\left\{\frac{1}{4}, \frac{1}{8}, \frac{1}{12}, \frac{1}{16}\ldots\right\}$

$\frac{2}{3}$ 0358

a. $\left\{\frac{2}{3}, \frac{2}{6}, \frac{2}{9}, \frac{2}{12}\ldots\right\}$
b. $\left\{\frac{2}{3}, \frac{4}{3}, \frac{6}{3}, \frac{8}{3}\ldots\right\}$
*c. $\left\{\frac{2}{3}, \frac{4}{6}, \frac{6}{9}, \frac{8}{12}\ldots\right\}$
d. $\left\{\frac{2}{3}, \frac{6}{12}, \frac{8}{15}, \frac{10}{20}\ldots\right\}$

$\frac{5}{6}$ 0359

*a. $\left\{\frac{5}{6}, \frac{10}{12}, \frac{15}{18}, \frac{20}{24}\ldots\right\}$
b. $\left\{\frac{5}{6}, \frac{10}{14}, \frac{15}{18}, \frac{20}{22}\ldots\right\}$
c. $\left\{\frac{5}{6}, \frac{5}{12}, \frac{5}{18}, \frac{5}{22}\ldots\right\}$
d. $\left\{\frac{5}{6}, \frac{12}{6}, \frac{18}{6}, \frac{24}{6}\ldots\right\}$

$\frac{3}{5}$ 0360

- a. $\left\{\frac{3}{5}, \frac{3}{9}, \frac{3}{12}, \frac{3}{16}\ldots\right\}$
- *b. $\left\{\frac{3}{5}, \frac{6}{10}, \frac{9}{15}, \frac{12}{20}\ldots\right\}$
- c. $\left\{\frac{3}{5}, \frac{6}{10}, \frac{9}{12}, \frac{12}{15}\ldots\right\}$
- d. $\left\{\frac{3}{5}, \frac{3}{10}, \frac{6}{12}, \frac{6}{15}\ldots\right\}$

GIVEN AN INCOMPLETE PAIR OF EQUIVALENT FRACTIONS, THE STUDENT WILL APPLY METHODS USED TO COMPUTE EQUIVALENT FRACTIONS BY FINDING THE MISSING NUMERATOR OR DENOMINATOR. 0145

Directions: Find the missing numerator or denominator which makes the fractions equivalent.

$\frac{2}{3} = \frac{n}{9}$ 0361

- a. 2
- b. 3
- *c. 6
- d. 1

$\frac{4}{5} = \frac{12}{n}$ 0362

- *a. 15
- b. 5
- c. 20
- d. 10

$\frac{6}{10} = \frac{30}{n}$ 0363

- a. 10
- *b. 50
- c. 30
- d. 60

$\frac{15}{20} = \frac{60}{n}$ 0364

a. 20
b. 40
*c. 80
d. 60

$\frac{n}{56} = \frac{7}{8}$ 0365

a. 7
b. 42
c. 28
*d. 49

$\frac{100}{n} = \frac{20}{30}$ 0366

a. 120
*b. 150
c. 100
d. 30

$\frac{150}{n} = \frac{3}{5}$ 0367

a. 100
b. 150
c. 200
*d. 250

THE CHILD WILL SHOW HIS UNDERSTANDING OF RELATIVE SIZE OF FRACTIONS BY COMPARING GIVEN FRACTIONS AND SELECTING THE CORRECT STATEMENT THAT DEMONSTRATES THE COMPARISON. 0094

Directions: If the first fraction is larger than the second, cross out the A; if the second fraction is larger than the first cross out the B; if the two fractions are equivalent cross out the C.

A ~~B~~ C $\frac{1}{2}, \frac{5}{8}$ 0368

~~A~~ B C $\frac{4}{9}, \frac{1}{3}$ 0369

~~A~~ B C $\frac{5}{6}, \frac{7}{8}$ 0370

A B ~~C~~ $\frac{2}{3}, \frac{10}{15}$ 0371

A ~~B~~ C $\frac{1}{6}, \frac{1}{4}$ 0372

A ~~B~~ C $\frac{1}{8}, \frac{3}{16}$ 0373

A B ~~C~~ $\frac{9}{18}, \frac{2}{4}$ 0374

A ~~B~~ C $\frac{5}{7}, \frac{4}{5}$ 0375

~~A~~ B C $\frac{7}{16}, \frac{3}{8}$ 0376

~~A~~ B C $\frac{1}{5}, \frac{1}{6}$ 0377

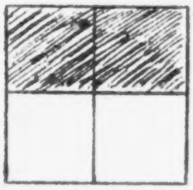
THE STUDENT WILL DEMONSTRATE KNOWLEDGE OF THE RELATIONSHIP BETWEEN FRACTIONS BY SELECTING THE TRUE RELATIONSHIP BETWEEN TWO FRACTIONS. 0098

Directions: After looking at the figures select from the list below the relationship involved. Circle the letter corresponding to the answer.

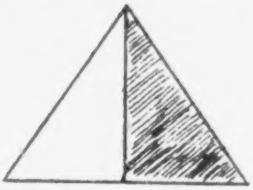
A. The fraction represented by the first figure is larger than the fraction represented by the second figure.
B. The fraction represented by the first figure is smaller than the fraction represented by the second figure.
C. The fractions represented by both figures are equivalent.

Diagram:

M



J



A B [✓ C] the whole 0378

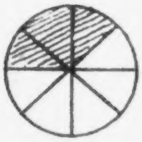
A B [✓ C] the shaded part 0379

A B [✓ C] the non-shaded part 0380

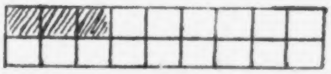
A [✓ B] C two parts of each 0381

Diagram:

R



S



~~A~~ B C the shaded parts 0382

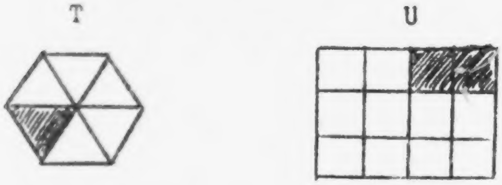
A ~~B~~ C the non-shaded parts 0383

A B ~~C~~ 4 parts of R and 9 parts of S 0384

~~A~~ B C 4 parts of R and 4 parts of S 0385

~~A~~ B C one part of each 0386

Diagram:



A B ~~C~~ the shaded parts 0387

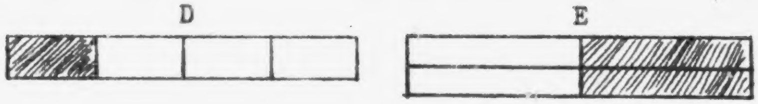
A B ~~C~~ the non-shaded parts 0388

~~A~~ B C 3 parts of each 0389

A ~~B~~ C 3 parts of T and 7 parts of U 0390

~~A~~ B C 1 part of each 0391

Diagram:



A ~~B~~ C the shaded parts 0392

~~A~~ B C the non-shaded parts 0393

A B ~~C~~ 3 parts of each 0394

A B ~~C~~ 1 part of each 0395

~~A~~ B C 2 parts of D and 1 part of E 0396

GIVEN AN EQUATION THE STUDENT WILL DEMONSTRATE AN UNDERSTANDING THAT THE MULTIPLICATION OF RECIPROCALS EQUALS ONE BY SELECTING A FRACTION FROM A LIST WHICH MAKES THE EQUATION TRUE. 0176

Directions: The following equations are written with unknown symbols for numbers. Use what you know about recepricals to select a symbol that will make a true equation.

$\frac{*}{\square}$ x? =$\triangle$? = 0397

a. $\frac{\triangle}{*}$

b. $\frac{*}{*}$

c. $\frac{\triangle}{\square}$

*d. $\frac{\square}{*}$

0398

? x $\frac{\triangle}{O}$ = $\Box$

a. $\frac{O}{O}$

*b. $\frac{O}{\triangle}$

c. $\frac{\Box}{O}$

d. $\frac{\triangle}{\Box}$

0399

$\frac{\Box}{\smile}$ x ? = *

*a. $\frac{\smile}{\Box}$

b. $\frac{*}{\smile}$

c. $\frac{\Box}{\Box}$

d. $\frac{\Box}{\smile}$

0400

$\frac{S}{\diamond}$ x ? = T

a. $\frac{T}{\diamond}$

b. $\frac{S}{T}$

c. $\frac{\diamond}{T}$

*d. $\frac{\diamond}{S}$

0401

$\frac{\cap}{\cup}$ x ? = 0

a. $\frac{O}{\cup}$

b. $\frac{\wedge}{O}$

*c. $\frac{\cup}{\wedge}$

d. $\frac{O}{O}$

$\frac{+}{8}$ x ? = ⬡ 0402

a. $\frac{+}{8}$
*b. $\frac{8}{+}$
c. $\frac{⬡}{+}$
d. $\frac{⬡}{8}$

THE STUDENT WILL DEMONSTRATE HIS COMPREHENSION OF RECIPROCALS BY IDENTIFYING THE CORRECT PRODUCT OF A PAIR OF FRACTIONAL NUMBERS. 0239

What is the product of 3/5 x 5/3? 0403

a. 3/5
*b. 1
c. 5/3

What is the product of 5/12 x 12/5? 0404

a. 5/12
b. 5/60
*c. 1

What is the product of 4/7 x 7/4? 0405

*a. 1
b. 4/28
c. 7/28

What is the product of 2/3 x 3/2? 0406

*a. 1
b. 6/3
c. 3/6

What is the product of 7/8 x 8/7? 0407

a. 8/56
*b. 1
c. 7/56

What is the product of 10/19 x 19/10? 0408

a. 19/190
b. 219/190
* c. 1

What is the product of 6/5 x 5/6? 0409

*a. 1
b. 6/30
c. 30/6

What is the product of 7/16 x 16/7? 0410

a. 7/16
*b. 1
c. 16/7

What is the product of 11/9 x 9/11? 0411

a. 9/11
*b. 1
c. 11/9

What is the product of 23/96 x 96/23? 0412

*a. 1
b. 23/96
c. 2/3

Source: Harcourt, Brace, Elementary Math 5, p. 314.

GIVEN A RATIONAL NUMBER, THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF THE RELATIONSHIP BETWEEN MIXED NUMERAL OR IMPROPER FRACTION BY SELECTING AN EQUIVALENT ALTERNATIVE FORM. 0160

Directions: Find an equivalent of the given number.

1 2/3 0413

a. 2/3
b. 12/3
c. 6/3
*d. 5/3

8/5 0414

a. 1 4/5
*b. 1 3/5
c. 2
d. 2 2/5

2 4/6 0415

a. 12/6
b. 24/2
*c. 16/6
d. 8/6

15/4 0416

a. 3
*b. 3 3/4
c. 4
d. 4 3/4

4 5/12 0417

*a. 53/12
b. 48/12
c. 20/12
d. 5/12

3/8 0418

a. 4
b. 3 7/8
*c. 4 1/8
d. 8 1/8

16 2/3 0419

a. 32/3
b. 48/3
c. 162/3
*d. 50/3

79/4 0420

a. 40 1/4
b. 20 3/4
*c. 19 3/4
d. 14 3/4

GIVEN A LIST OF IMPROPER FRACTIONS, OR A LIST OF MIXED NUMERALS, THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF THE PROCESS OF CHANGING ONE TO THE OTHER BY SELECTING THE EQUIVALENT OF THE NUMBER GIVEN. 0173

Directions: Select the fraction which is equal to the mixed numeral.

1 7/8 0421

*a. 15/8
b. 16/8
c. 14/8
d. 17/8

0422

5 3/9

a. 17/9
b. 32/9
*c. 45/9
d. 24/9

0423

6 1/4

a. 11/4
b. 24/4
c. 10/4
*d. 25/4

0424

3 4/5

a. 23/5
b. 12/5
*c. 19/5
d. 17/5

0425

7 2/3

a. 17/3
*b. 23/3
c. 13/3
d. 12/3

Directions: Select the mixed numeral which is equal to the fraction.

0426

31/8

a. 4 1/8
*b. 3 7/8
c. 3 5/8
d. 4

11/2 0427

a. 6 1/2
b. 4 1/2
c. 3 3/2
*d. 5 1/2

19/7 0428

*a. 2 5/7
b. 1 2/7
c. 3 2/7
d. 2 3/7

25/6 0429

a. 3 3/6
b. 3 5/6
c. 4/46
*d. 4 1/6

43/10 0430

a. 3 7/10
*b. 4 3/10
c. 3 4/10
d. 4 1/10

DECIMALS

THE STUDENT CAN DEMONSTRATE A KNOWLEDGE OF NUMBER POSITION BY PLACING A DECIMAL POINT AFTER THE FIRST DIGIT IN ANY NUMBER. 0005

Your teacher asks you to place the decimal point after the first digit in the number 1234. After you have done this your number will look like 0431

a. 123.4
b. 12.34
*c. 1.234

Source: Elementary School Mathematics #4, 2nd Ed., Addison-Wesley, Ch. 5.
"Peas and Particles" Elementary Science Study, Webster, McGraw-Hill.

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF DECIMAL POINTS BY LOCATING A DECIMAL POINT AFTER THE FIRST DIGIT IN ANY WHOLE NUMBER TO THE BASE 10. 0006

Which one of the following numbers has a decimal point after the first digit? 0432

a. 123.4
b. 12.34
*c. 1.234

The number 1.234 has a decimal point after the 0433

*a. first digit
b. second digit
c. third digit

Source: Elementary School Mathematics #4, 2nd. Ed., Addison-Wesley, Ch. 5.
"Peas and Particles" Elementary Science Study, Webster, McGraw-Hill.

THE STUDENT WILL DEMONSTRATE HIS ABILITY TO ANALYZE GIVEN DECIMAL NOTATIONS BY APPLYING HIS CONCLUSIONS TO NEW NOTATIONS. 0125

Directions: Given the following notations: 3.672 = 3 + 6/10 + 7/10 + 2/1000, choose the answers to questions about similar notations.

In 5.04 - the 4 means 0434

a. 4/10
*b. 4/100
c. 4/1000

In 2.605 - the 6 means 0435

*a. 6/10
b. 6/100
c. 6/1000

In 76.354 - the 5 means 0436

a. 5/10
*b. 5/100
c. 5/1000

In 26.008, the 8 means 0437

a. 8/10
b. 8/100
*c. 8/1000

In 64.7, the 7 means 0438

*a. 7/10
b. 7/100
c. 7/1000

In .367 the 7 means 0439

a. 7/10
*b. 7/100
c. 7/1000

In 6.079 the 0 means 0440

*a. 0/10
b. 0/100
c. 0/1000

Source: Addison-Wesley, Bk. 5, pg. 271.

THE STUDENT WILL DEMONSTRATE HIS ABILITY TO RECALL DECIMAL PLACE VALUE BY CORRECTLY SELECTING THE ANSWER FROM A LIST OF ALTERNATIVES. 0156

Directions: Given the number 17.890325 which of the following is true about place value?

The digit 9 is in which place 0441

a. tens
b. tenths
c. hundreds
*d. hundredths

The digit in the thousandths place is 0442

a. 1
*b. 0
c. 3
d. 2

The digit in the tens place is 0443

- *a. 1
- b. 8
- c. 9
- d. 0

The digit 3 is in which place 0444

- a. thousands
- *b. ten thousandths
- c. hundred thousandths
- d. hundredths

The largest decimal place used 0445

- a. ten thousandths
- b. hundred thousandths
- *c. millionths
- d. ten millionths

The decimal point is placed between 0446

- a. tens, tenths
- b. ones, oneths
- c. tenths, oneths
- *d. ones, tenths

THE STUDENT WILL SHOW UNDERSTANDING OF THE PLACE VALUE OF THE RIGHT OF A DECIMAL POINT BY SELECTING THE VALUE NAMED FROM A LIST OF ALTERNATIVES. 0178

Directions: Circle the letter in front of the answer.

In the numeral .6834

The 3 is in the 0447

a. tenths place
b. hundredths place
*c. thousandths place
d. ten thousandths place

The 4 is in the 0448

a. tenths place
b. hundredths place
c. thousandths place
*d. ten thousandths place

The 6 is in the 0449

*a. tenths place
b. hundredths place
c. thousandths place
d. ten thousandths place

In the numeral 2.3146

The 3 is in the 0450

*a. tenths place
b. hundredths place
c. thousandths place
d. ten thousandths place

The 4 is in the 0451

a. tenths place
b. hundredths place
*c. thousandths place
d. ten thousandths place

The 6 is in the 0452

a. tenths
b. hundredths place
c. thousandths place
*d. ten thousandths place

In the numeral 27.634

The three is in the 0453

a. tenths place
*b. hundredths place
c. thousandths place
d. ten thousandths place

The 4 is in the 0454

a. tenths place
b. hundredths place
*c. thousandths place
d. ten thousandths place

The 6 is in the 0455

*a. tenths place
b. hundredths place
c. thousandths place
d. ten thousandths place

GIVEN A NUMBER OF EQUATIONS THE STUDENT WILL SHOW KNOWLEDGE OF PLACE VALUE OF THE DECIMAL POINT IN THE QUOTIENT BY SELECTING THE PLACE VALUE WHICH WOULD SHOW THIS. 0179

Directions: In the following equations circle the letter which would best complete the sentence. The quotient will begin with a ____________.

$.x\,\overline{).xx}$ 0456

a. Whole number
*b. Number in tenths place
c. Number in hundredths place
d. Number in thousandths place

$.x\,\overline{)x.x}$ 0457

*a. Whole number
b. Number in tenths place
c. Number in hundredths place
d. Number in thousandths place

$.x\,\overline{)\ .xx}$ 0458

a. Whole number
*b. Number in tenths place
c. Number in hundredths place
d. Number in thousandths place

$xxx\,\overline{).xxx}$ 0459

a. Whole number
b. Number in tenths place
c. Number in hundredths place
*d. Number in thousandths place

$xx.x\,\overline{)\ .xxx}$ 0460

a. Whole number
b. Number in tenths place
*c. Number in hundredths place
d. Number in thousandths place

THE STUDENT WILL EVALUATE GIVEN STATEMENTS BY SELECTING THE BEST CONCLUSION. 0185

Directions: Four statements are given. From the numbered statements below these, circle the best answer.

a. True of decimals but not whole numbers
b. True of whole numbers but not decimals
c. True of both whole numbers and decimals
d. True of neither whole numbers nor decimals

In regrouping numbers to subtract you have ten times the value of the column to the right. 0461

a.
b.
*c.
d.

Adding zeros to the left of the numeral changes the value of the number 0462

*a.
b.
c.
d.

Adding zeros to the right of the numeral changes the value of the numeral 0463

a.
*b.
c.
d.

In vertical multiplication one shoud keep the place value of each factor in a straight line. 0464

a.
*b.
c.
d.

In division the quotient is less than the dividend. 0465

a.
*b.
c.
d.

In multiplication the product may be less than one factor. 0466

*a.
b.
c.
d.

Add or subtract zero the answer equals zero 0467

a.
b.
c.
*d.

Multiply or divide a numeral by zero and the answer equals zero. 0468

a.
b.
*c.
d.

GIVEN A RATIONAL NUMBER, THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF THE RELATIONSHIP BETWEEN DECIMALS AND FRACTIONS BY SELECTING EITHER AN EQUIVALENT FRACTION OR DECIMAL OF THAT NUMBER. 0155

Directions: Given a number, find its equivalent..

4.3 0469

a. $\frac{43}{100}$
*b. $4\frac{3}{10}$
c. 43
d. $4\frac{3}{100}$

$\frac{36}{100}$ 0470

a. 3.6
b. 36
*c. .36
d. .036

.021 0471

a. $2\frac{1}{100}$
b. $\frac{21}{100}$
c. $\frac{21}{10}$
*d. $\frac{21}{1000}$

$6\frac{93}{1000}$ 0472

a. 6.93
b. .693
*c. 6.093
d. 6.0093

.00803 0473

*a. $\frac{803}{10,000}$
b. $\frac{803}{1,000}$
c. $8\frac{3}{10,000}$
d. $\frac{83}{1,000}$

$\frac{72}{10}$ 0474

a. .72
b. .072
*c. 7.2
d. 72

.03842 0475

a. $\frac{3842}{10,000}$
*b. $\frac{3842}{100,000}$
c. $\frac{3842}{1,000,000}$
d. $\frac{03842}{1,000,000}$

BASES

THE STUDENT WILL SHOW KNOWLEDGE OF THE RELATIONSHIP OF BASE TEN TO BASE FIVE BY SELECTING THE ALTERNATIVE BASE REPRESENTATION. 0164

In whole numbers the right hand column in both base ten and base five is called 0476

a. base
*b. ones
c. fives
d. tens

In whole numbers a way of finding the value of a given column is to 0477

*a. multiply the base times the value of the preceding column.
b. add base to the value of the preceding column.
c. multiply the digit in the preceding column by ten.
d. add ten to the digit in the preceding column.

The numeral equivalent to the base ten numeral 46 is 0478

a. $121_{(5)}$
b. $412_{(5)}$
*c. $141_{(5)}$
d. $231_{(5)}$

The numeral equivalent to the base five numeral $124_{(5)}$ is 0479

a. 15
*b. 39
c. 34
d. 54

The largest digit in either base is always 0480

a. equal to the base.
b. one more than the base.
*c. one less than the base.

THE PUPIL WILL DEMONSTRATE HIS KNOWLEDGE OF BASES BY ANALYZING A GIVEN NUMBER IN BASE TEN AND BASE FIVE AND SELECTING AN EQUIVALENT NUMBER IN A DIFFERENT BASE. 0166

Directions: Given an equivalent number in grid form in base ten and base five select the equivalent in the other base.

0481

a. Base Ten

10x10x10x10	10x10x10	10x10	Tens	Ones
			2	5

b. Base Five

5x5x5x5	5x5x5	5x5	Fives	Ones
		1	0	0

c. Base Two
1. 10001
2. 23221
*3. 11001
4. 11111

0482

a. Base Ten

10x10x10x10	10x10x10	10x10	Tens	Ones
		3	4	1

b.

5x5x5x5	5x5x5	5x5	Fives	Ones
	2	3	3	1

c. Base Eight
*1. 525
2. 791
3. 1432
4. 2174

Base Ten

10x10x10x10	10x10x10	10x10	Tens	Ones
		1	4	8

0483

Base Five

5x5x5x5	5x5x5	5x5	Fives	Ones
	1	0	4	3

Base Six

a. 3210
b. 4031
c. 259
*d. 404

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF THE CONVERSION OF BASE10 TO 8 BY CORRECTLY IDENTIFYING THE BASE 8 NUMERAL FROM A GIVEN BASE 10 NUMERAL. 0269

Directions: Match Column I with Column II.

Column I Base 10	Column II	
a. 63	n 135	0484
b. 95	u 121	0485
c. 10	o 102	0486
d. 87	___ 67	0487
e. 56	p 42	0488
f. 44	___ 83	0489
g. 16	v 30	0490
h. 89	f 54	0491
i. 12	w 47	0492
j. 69	s 100	0493
k. 38	e 70	0494
l. 88	y 55	0495
m. 29	c 12	0496
n. 93	r 73	0497
o. 66	___ 19	0498
p. 34	a 77	0499
q. 48	t 110	0500
r. 59	q 60	0501
s. 64	l 130	0502
t. 72	d 127	0503
u. 81	m 35	0504
v. 24	___ 129	0505
w. 39	h 131	0506
x. 33	___ 23	0507
y. 45	x 41	0508
	i 14	0509
	g 20	0510
	j 105	0511
	b 137	0512
	k 46	0513

Source: Houghton Mifflin, p. 216.

THE STUDENT WILL DETECT THE PATTERN INVOLVED IN CONVERTING BASE TEN TO BASE EIGHT AND CORRECTLY IDENTIFY THE NUMERAL FOR A UNIQUE BASE SIX OPERATION. 0274

Directions: Circle the correct base 6 numeral.

If base 10 numeral is 24, base 8 is 30, base 6 is 0514

a. 36
*b. 40
c. 45

If base 10 numeral is 60, base 8 is 74, base 6 is 0515

*a. 140
b. 204
c. 88

If base 10 numeral is 100, base 8 is 144, base 6 is 0516

a. 188
b. 154
*c. 244

If base 10 number is 96, base 8 is 140, base 6 is 0517

a. 104
*b. 240
c. 184

If base 10 numeral is 53, base 8 is 65, base 6 is 0518

a. 79
*b. 125
c. 52

If base 10 numeral is 13, base 8 is 15, base 6 is 0519

*a. 21
b. 30
c. 17

If base 10 numeral is 86, base 8 is 126, base 6 is 0520

a. 166
b. 152
*c. 222

If base 10 numeral is 66, base 8 is 102, base 6 is 0521

*a. 150
b. 138
c. 202

If base 10 numeral is 33, base 8 is 41, base 6 is 0522

a. 49
*b. 53
c. 50

If base 10 numeral is 700, base 8 is 1274, base 6 is 0523

a. 1848
*b. 3124
c. 2033

If base 10 numeral is 338, base 8 is 622, base 6 is 0524

a. 822
b. 906
*c. 1322

If base 10 numeral is 207, base 8 is 317, base 6 is 0525

a. 427
*b. 543
c. 322

If base 10 numeral is 16, base 8 is 20, base 6 is 0526

*a. 24
b. 28
c. 30

If base 10 numeral is 44, base 8 is 54, base 6 is 0527

a. 64
b. 32
*c. 112

If base 10 numeral is 76, base 8 is 114, base 6 is 0528

a. 188
*b. 204
c. 168

If base 10 numeral is 9, base 8 is 11, base 6 is 0529

*a. 13
b. 17
c. 19

If base 10 numeral is 99, base 8 is 143, base 6 is 0530

a. 184
b. 303
*c. 243

If base 10 numeral is 59, base 8 is 73, base 6 is 0531

a. 87
b. 123
*c. 135

If base 10 numeral is 80, base 8 is 120, base 6 is 0532

*a. 212
b. 132
c. 160

If base 10 numeral is 48, base 8 is 60, base 6 is 0533

a. 72
*b. 120
c. 54

Source: Houghton Mifflin, p. 341.

THE STUDENT WILL SHOW KNOWLEDGE OF ADDITION AND SUBTRACTION OF BASE FIVE NUMERALS AND THE TRANSFERENCE TO BASE TEN BY SELECTING THE EQUIVALENT EQUATION. 0165

$44_{(5)} + 32_{(5)} =$ 0534

a. $51_{(10)}$
b. $35_{(10)}$
c. $76_{(10)}$
*d. $41_{(10)}$

$34_{(5)} + 40_{(5)} =$ 0535

*a. $39_{(10)}$
b. $70_{(10)}$
c. $74_{(10)}$
d. $34_{(10)}$

$41_{(5)} - 23_{(5)} =$ 0536

a. $18_{(10)}$
b. $13_{(10)}$
*c. $8_{(10)}$
d. $28_{(10)}$

$44_{(5)} - 32_{(5)} =$ 0537

a. $12_{(10)}$
*b. $7_{(10)}$
c. $2_{(10)}$
d. $17_{(10)}$

$44_{(5)} + 22_{(5)} =$ 0538

*a. $36_{(10)}$
b. $66_{(10)}$
c. $51_{(10)}$
d. $31_{(10)}$

ROMAN NUMERALS

THE STUDENT WILL RECALL HIS KNOWLEDGE OF ROMAN NUMERALS BY MATCHING THE ROMAN NUMERAL WITH THE CORRESPONDING ARABIC NUMERAL. 0266

Directions: Match column I with column II by placing the letter from column I on the line before the correct answer in column II

Column I

a. XIV
b. XXII
c. CXX
d. MLXIV
e. XVI
f. CDLXIX
g. DLII
h. XCIX
i. XIX
j. LXXXIV
k. MDX
l. LXVI
m. CCLXXVIII
n. MCXLIV
o. XLIV
p. XXXIII
q. DCII
r. CII
s. XXVII
t. MXC

Column II

___	402	0539
d	1064	0540
q	602	0541
e	16	0542
m	278	0543
r	102	0544
o	44	0545
n	1144	0546
___	89	0547
l	66	0548
g	552	0549
b	22	0550
p	33	0551
___	109	055
f	469	0553
c	120	0554
___	13	0555
s	27	0556
a	14	0557
i	19	0558
j	84	0559
t	1090	0560
k	1510	0561
h	99	0562

Source: Houghton Mifflin, pp. 22-23.

PRIMES AND FACTORS

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF FACTORS BY SELECTING THOSE WHICH ARE FACTORS FROM THOSE WHICH ARE NOT. 0079

If the numbers given are factors of 48 cross out the F; if the numbers given are not factors of 48 cross out the N.

~~F~~ N 8,6
~~F~~ N 2,3,8 0563
~~F~~ N 12,4 0564
F ~~N~~ 3,4,5 0565
~~F~~ N 6,4,2 0566
F ~~N~~ 6,3,3 0567
~~F~~ N 4,2,3,2 0568
0569

If the numbers given are factors of 72 cross out the F; if the numbers given are not factors of 72 cross out the N.

~~F~~ N 6,2,6
F ~~N~~ 5,3,6 0570
~~F~~ N 3,2,2,6 0571
F ~~N~~ 3,4,5 0572
~~F~~ N 4,3,6 0573
~~F~~ N 2,4,9 0574
~~F~~ N 2,2,18 0575
0576

Source: Addison-Wesley, B. 5, pp. 168-169.

THE STUDENT WILL DISTINGUISH BETWEEN FACTORS AND PRODUCTS BY SELECTING THOSE WHICH ARE FACTORS FROM THOSE WHICH ARE PRODUCTS. 0080

If the number for A is a factor cross out the Y; if the number for A is a product cross out the P.

~~Y~~ P A x 3 = 24 0577

~~Y~~ P 28 ÷ 4 = A 0578

Y ~~P~~ 32 x 3 = A 0579

Y ~~P~~ A ÷ 5 = 7 0580

~~Y~~ P 13 x A = 52 0581

~~Y~~ P 26 ÷ A = 13 0582

~~Y~~ P 4 x A x 3 = 48 0583

Y ~~P~~ 72 = A ÷ 6 0584

Y ~~P~~ A = 16 x 3 0585

~~Y~~ P A = 56 ÷ 8 0586

Source: Addison Wesley, Bk. 5, p. 169.

THE STUDENT WILL APPLY HIS KNOWLEDGE OF FACTORING BY SELECTING THE CORRECT ANSWERS TO WORD PROBLEMS. 0081

Directions: Read the problems and circle the letter of the correct answer.

Miss Bradley has 25 pupils in her class. She wants to seat them in 5 rows. How many children will sit in each row? 0587

a. 6
b. 4
*c. 5
d. 7

A 36 member boys club is going on a camping trip. At their last meeting they raised some questions. How many tents will be needed if 4 boys sleep in each? 0588

*a. 9
b. 12
c. 11
d. 8

If 12 boys share cooking utensils how many sets of utensils must be brought along? 0589

a. 4
b. 6
c. 5
*d. 3

If they bring along 72 cans of food how many cans should be allotted to each boy? 0590

a. 3
b. 1
*c. 2
d. 4

Jack and Jill carried the same number of buckets of water up the hill. Jack carried 3 buckets each trip and made 4 trips. Jill made 6 trips. How many buckets did she carry each time? 0591

a. 1
*b. 2
c. 3
d. 4

GIVEN A WHOLE NUMBER, THE STUDENT WILL DEMONSTRATE KNOWLEDGE OF PRIME FACTORS BY CORRECTLY SELECTING THE PRIME FACTORS FOR A GIVEN NUMBER FROM A LIST. 0140

Directions: Given a whole number, circle the alternative that shows its prime factors.

8 0592

a. 8x1
b. 4x2
c. 2x4x1
*d. 2x2x2

12 0593

a. 3x4
b. 1x12
*c. 2x3x2
d. 4x2x2

17 0594

a. 2x3x3
*b. 17x1
c. 4x2x2
d. 2x8

24 0595

a. 2x3x2x3
*b. 2x2x2x3
c. 3x3x2
d. 6x2x2

36 0596

*a. 3x2x2x3
b. 3x2x2x2
c. 3x3x3x2
d. 3x3x2

42 0597

a. 4x2x3
b. 4x2x7
c. 2x2x2x3
*d. 7x2x3

100 0598

a. 5x2x3
*b. 5x2x5x2
c. 5x2x5
d. 5x2x2x3

73 0599

a. 2x3x2x3x2
*b. 73x1
c. 3x3x8
d. 3x3x2x2x2

GIVEN A WHOLE NUMBER, THE STUDENT WILL APPLY HIS KNOWLEDGE OF COMMON FACTORS, BY SELECTING THE FRACTIONS THAT DO HAVE THAT NUMBER AS A COMMON FACTOR. 0150

Directions: Given a whole number, if it is a common factor of a fraction circle the letter F. If the whole number is not a common factor, circle the letter N.

Given: 2

[✓ F] N 6/8 0600
F [✓ N] 3/4 0601
F [✓ N] 12/15 0602
[✓ F] N 10/14 0603
F [✓ N] 5/8 0604
[✓ F] N 24/24 0605

Given: 5

F ~~N~~ 10/13 0606
F ~~N~~ 8/15 0607
~~F~~ N 5/20 0608
~~F~~ N 20/30 0609
F ~~N~~ 55/62 0610
F ~~N~~ 32/100 0611

Given: 9

F ~~N~~ 6/9 0612
~~F~~ N 27/36 0613
F ~~N~~ 27/28 0614
~~F~~ N 63/90 0615
~~F~~ N 108/126 0616
F ~~N~~ 232/270 0617

THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF THE TERM "FACTOR" BY IDENTIFYING FACTORS IN ARRAYS. 0188

What are the factors in the following array? 0618

o o o
o o o
o o o
o o o
o o o
o o o

*a. 6 and 3
b. 18 and 1
c. 12 and 6

Which equation correctly describes the following array? 0619

o o o o o o
o o o o o o
o o o o o o

a. 18 x 1 = 18
*b. 3 x 6 = 18
c. 6 x 3 = 18

In the equation 5 x 4 = 20, which numbers are factors? 0620

a. 4 and 20
*b. 5 and 4
c. 5 and 20

Name the factors in the following array. 0621

```
o o o o o
o o o o o
o o o o o
```

*a. 3 and 5
b. 15 and 1
c. 9 and 6

Name the factors in the following array. 0622

```
o o o o o o
```

a. 3 x 3
b. 6 x 1
*c. 1 x 6

Which equation correctly describes the following array? 0623

a. 7 x 4 = 28
b. 28 x 1 = 28
*c. 4 x 7 = 28

```
o o o o o o o
o o o o o o o
o o o o o o o
o o o o o o o
```

Name the factors in the following array. 0624

```
o o o o
o o o o
o o o o
o o o o
```

a. 16 x 1
*b. 4 x 4
c. 1 x 16

Name the factors in the following array. 0625

```
o o o o o
o o o o o
```

*a. 2 and 5
b. 5 and 5
c. 10 and 1

Which equation correctly describes the following array? 0626

o o o
o o o
o o o
o o o

a. 3 x 4 = 12
*b. 4 x 3 = 12
c. 12 x 1 = 12

Study the following array. Which number is NOT a factor? 0627

*a. 30
b. 5
c. 6

o o o o o
o o o o o
o o o o o
o o o o o
o o o o o
o o o o o

Source: Merrill, Discovering Math 5. p. 28.

THE STUDENT WILL ANALYZE A COMPOSITE NUMBER FOR THE NUMBER OF ARRAYS THAT CAN BE ARRANGED BY CORRECTLY IDENTIFYING THE NUMBER OF ARRAYS POSSIBLE FOR THAT NUMBER. 0280

Analyze the composite number 60 and identify the correct number of arrays possible. (SRA) 0628

a. 6
*b. 12
c. 10
d. 8

Analyze the composite number 56 and identify the correct number of arrays possible. (SRA) 0629

a. 4
b. 9
c. 5
*d. 8

Analyze the composite number 87 and identify the correct number of arrays possible. 0630
(SRA)

a. 5
*b. 4
c. 6
d. 2

Analyze the composite number 84 and identify the correct number of arrays possible. 0631
(SRA)

*a. 12
b. 10
c. 8
d. 14

Analyze the composite number 99 and identify the correct number of arrays possible. 0632
(SRA)

a. 2
b. 8
c. 4
*d. 6

Analyze the composite number 36 and identify the correct number of arrays possible. 0633
(SRA)

a. 8
b. 10
*c. 9
d. 7

Analyze the composite number 72 and identify the correct number of arrays possible. 0634
(SRA)

a. 9
*b. 12
c. 10
d. 11

Analyze the composite number 64 and identify the correct number of arrays possible. (SRA) 0635

a. 8
*b. 7
c. 9
d. 6

THE PUPIL WILL APPLY HIS KNOWLEDGE OF USING ARRAYS FOR DETERMINING THE NUMBER OF FACTORS FOR A NUMBER BY IDENTIFYING ALL THE FACTORS OF A GIVEN WHOLE NUMBER. 0281

From the drawing of all the possible arrays for the whole number 32, identify the complete set of factors. (SRA) 0636

a. 1, 32, 9, 14
*b. 1, 4, 8, 2, 16, 32
c. 1, 16, 32, 4
d. 2, 16, 8,

From the drawing of all the possible arrays for the whole number 36, identify the complete set of factors. (SRA) 0637

a. 36, 2, 16
b. 16, 2, 4, 6
c. 8, 12, 9,
*d. 12, 4, 3, 36, 1, 2, 6, 9,

From the drawing of all the possible arrays of the whole number 48, identify the complete set of factors. (SRA) 0638

a. 48, 1, 4, 9, 6, 3, 11, 21
*b. 48, 2, 12, 4, 8, 24, 12, 1, 36, 16
c. 2, 48, 7, 1, 9, 5, 22
d. 1, 3, 8, 12, 16

From the drawing of all the possible arrays for the whole number 25, identify the complete set of factors. (SRA) 0639

a. 1, 5
b. 1, 0, 5
c. 1, 5, 5, 25
*d. 1, 5, 25

From the drawing of all the possible arrays for the whole number 67, identify the complete set of factors. (SRA) 0640

a. 1, 3, 2, 67
b. 67, 2, 3, 1
*c. 67, 1
d. 1, 3, 21, 67

From the drawing of all possible arrays for the whole number 58, identify the complete set of factors. (SRA) 0641

a. 9, 3, 1, 58
b. 2, 58
*c. 29, 1, 2, 58
d. 1, 4, 16, 58

From the drawing of all possible arrays for the whole number 86 identify the complete set of factors. (SRA) 0642

*a. 86, 2, 1, 43
b. 1, 2, 3, 6, 12, 86
c. 3, 32, 43, 2
d. 1, 4, 21, 86

THE STUDENT WILL RECALL THAT COMPOSITE NUMBERS ARE PRODUCTS OF PRIMES BY CORRECTLY MATCHING THE PRODUCT WITH IT'S PRIME FACTORS. 0284

Directions: Match a given product with it's prime factors by placing the product in the blank beside it's prime factors.

Product

a. 4
b. 75
c. 10
d. 48
e. 8
f. 84
g. 56
h. 9
i. 64
j. 52
k. 49
l. 72
m. 6
n. 100
o. 60
p. 111
q. 62
r. 85
s. 38
t. 91

Factors		
60	5x3x2x2	0643
____	2 x 7 x 3	0644
84	2 x 2 x 3 x 7	0645
72	2 x 2 x 2 x 3 x 3	0646
100	2 x 5 x 2 x 5	0647
____	2 x 2 x 1	0648
91	7 x 13	0649
85	5 x 17	0650
____	2 x 0 x 3	0651
____	4 x 13	0652
62	31 x 2	0653
8	2 x 2 x 2	0654
38	2 x 19	0655
75	5 x 5 x 3	0656
10	5 x 2	0657
111	3 x 37	0658
48	2 x 2 x 3 x 2 x 2	0659
64	2 x 2 x 2 x 2 x 2 x 2	0660
9	3 x 3	0661
4	2 x 2	0662
56	2 x 2 x 7 x 2	0663
____	3 x 1 x 3	0664
6	2 x 3	0665
49	7 x 7	0666
____	2 x 13 x 2	0667

THE STUDENT WILL DETECT NEW SITUATIONS IN PROBLEM SOLVING TO WHICH HE CAN RELATE A PATTERN OF PRIME FACTORS. 0285

In planning a garden, two kinds of bulbs are to be planted in alternating rows all of the same length. Tulip bulbs are to be planted 7 inches apart. Daffodils are to be planted 5 inches apart. How many bulbs will be planted in each row? 0668

Mary says: 8 daffodils and 6 tulips
John says: 15 daffodils and 11 tulips
Bill says: 22 daffodils and 16 tulips
Who is correct? Draw a picture.

a. Mary
b. John
c. Bill
*d. All of the above
e. None of the above

Mary works in a candy store. She wants to stack boxes of candy that are 4 inches long on each side next to boxes of candy that are 6 inches long on each side so that the two stacks are the same height. How can she do it? 0669

a. It is not possible.
b. 3 of the 4 inch boxes for every 2 of the 6 inch boxes.
c. 6 of the 4 inch boxes for every four of the 6 inch boxes.
d. 9 of the 4 inch boxes for every 6 of the 6 inch boxes.
* e. b, c, and d are correct.

THE STUDENT WILL APPLY HIS KNOWLEDGE OF FACTORING BY IDENTIFYING THE RULES BEING USED TO A GIVEN LIST OF PRODUCTS. 0286

Directions: From the list of examples below, select one to match each of the following statements.

Statements

e If two numbers have 5 as a factor, their product has 5 as a factor 0670

b If two numbers have 7 as a factor, their difference has 7 as a factor 0671

f If two numbers have 3 as a factor, their sum has 3 as a factor 0672

i A number that has 12 and 15 as factors also has 60 as a factor 0673

h A number that has 2, 3, and 5 as factors also has 15 as a factor 0674

d A product of 3 consecutive whole numbers has 6 as a factor 0675

Examples

a. 45 and 53
b. 63 and 49
c. 49 and 72
d. 24 and 210
e. 60 and 40
f. 27 and 18
g. 45 and 58
h. 30 and 90
i. 120 and 60
j. 90 and 80
k. 26 and 79
l. 120 and 72

Directions: From the given list of products, select the least product that has the following factors.

h A factor of 3 and a factor of 5 0676

c A factor of 4 and a factor of 5 0677

g A factor of 4 and a factor of 3 0678

i A factor of 6 and a factor of 3 0679

c A factor of 10 and a factor of 4 0680

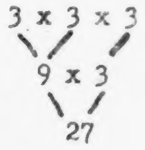
d A factor of 30 and a factor of 24 0681

a. 720
b. 40
c. 20
d. 120
e. 24
f. 18
g. 12
h. 15
i. 6

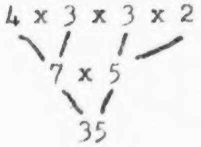
THE STUDENT USING HIS KNOWLEDGE OF FACTOR TREES CAN IDENTIFY THOSE WHICH ARE COMPLETED CORRECTLY FROM THOSE WHICH ARE NOT COMPLETED CORRECTLY. 0084

Directions: If the factor tree is completed correctly circle the C; if it is not correct circle the I.

[✓ C] I 0682

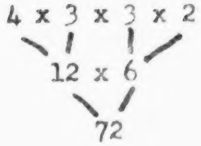


C ~~I~~


4 x 3 x 3 x 2
7 x 5
35

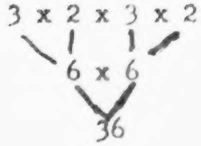
0683

C ~~I~~


4 x 3 x 3 x 2
12 x 6
72

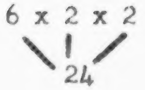
0684

~~C~~ I


3 x 2 x 3 x 2
6 x 6
36

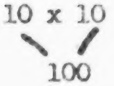
0685

C ~~I~~



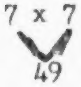
0686

C ~~I~~



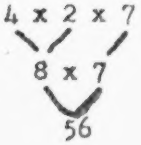
0687

~~C~~ I



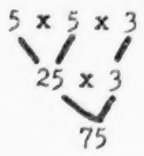
0688

C ~~I~~


4 x 2 x 7
8 x 7
56

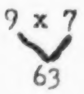
0689

~~C~~ I


5 x 5 x 3
25 x 3
75

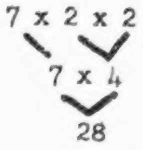
0690

C ~~I~~



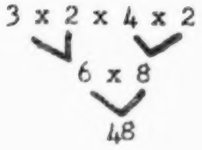
0691

~~C~~ I


7 x 2 x 2
7 x 4
28

0692

C ~~I~~


3 x 2 x 4 x 2
6 x 8
48

0693

THE STUDENT CAN DEMONSTRATE KNOWLEDGE OF FACTORS AND MULTIPLES BY INDICATING GIVEN NUMBERS AS PRIMES, COMMON FACTORS OR MULTIPLES. 0073

A prime number is a number whose factors 0694

a. are itself
b. include zero
c. are multiples
*d. are one and itself

Every set of multiples of a number 0695

*a. includes zero
b. has a prime number
c. starts at one
d. are always even numbers

One is a factor of all numbers therefore __________ is not a prime number. 0696

*a. zero
b. seven
c. one hundred one
d. thirteen

If 10 is a factor of a number _________ will also be a factor. 0697

a. 0
b. 20
*c. 2
d. 4

If 17 is a factor of a number __________ will also be a factor. 0698

a. 10
b. 7
*c. 1
d. 0

Common factors can be called the intersection of 2 sets of factors. 0699

Set A {all factors of 15}

Set B {all factors of 30}

The common factors of A and B are

a. {5, 10, 15}
b. {1, 3, 5, 15, 30}
c. {1, 3, 5, 15}
*d. {1, 2, 3, 5, 15}

$A = \{\text{factors of } 32\}$ 0700

$B = \{\text{factors of } 72\}$

$A \cap B =$

a. $\{0, 2, 4, 8\}$
*b. $\{1, 2, 4, 8\}$
c. $\{2, 4, 8, 16\}$
d. $\{0. 2, 4, 8, 16\}$

The greatest common factor, or the GCF, is 0701

a. a listing of all factors
*b. the largest factor in the intersection
c. always one
d. the number common to both sets

The GCF of 10 and 15 is ________ 0702

a. 1
b. 2
*c. 5
d. 30

The GCF of 90 and 60 is 0703

a. 1
b. 15
*c. 30
d. 60

Multiples of a number are a set of numbers formed by multiplying a number times the set of 0704

a. counting numbers
*b. whole numbers
c. cardinal numbers
d. prime numbers

_________ is a multiple of 6 0705

a. 15
b. 46
c. 56
*d. 72

Common multiples are found in the intersection of 2 sets of multiples 0706

Set A = {multiples of 5}
Set B = {multiples of 7}

common multiples less than 5 of A and B are

a. {5, 7, 35, 70}
*b. {0, 35, 70}
c. {35, 70, 85}
d. {1, 35, 70}

There are _________ common multiples of 3 and 8 less than 50. 0707

a. 0
b. 1
*c. 2
d. 4

The least common multiples or the LCM of 2 sets of multiples is 0708

a. the largest multiple
b. one
c. zero
*d. first multiple alike

The LCM of 3 and 4 is 0709

a. 0
*b. 12
c. 24
d. 36

The LCM of 5 and 7 is 0710

a. 105
b. 70
*c. 35
d. 0

Find the product of 2 factors. It can always be called ______ of the numbers. 0711

a. the LCM
*b. a common multiple
c. a union
d. an intersection

The prime factors of a number can be found by continually dividing by the smallest primes until only a prime number remains. For example, to find the prime factorization of 12:

2)12
2)6
3

The prime factors of 12 are 2, 2, 3, or $2^2 \times 3$.

Using this method match the prime factorizations in Column II to the numbers in Column I.

	Column I	Column II	
b	224	a. $2^3 \times 67$	0712
d	432	b. $2^5 \times 7$	0713
a	536	c. $2^7 \times 7$	0714
c	896	d. $2^4 \times 3^3$	0715
		e. $2 \times 5 \times 67$	

The GCF and the LCM of 2 numbers can be found by using the prime factorization of each number. GCF is the product of all the factors each has in common, the LCM is the product of the factors used as many times as they appear in either factorization. Match the LCM or GCF in Column II with the numbers in Column I.

	Column I	Column II	
d	36, 48	a. $2^5 \times 11$ = LCM	0716
a	22, 32	b. $2^3 \times 5$ = LCM	0717
c	14, 54	c. $2 \times 3^3 \times 7$ = LCM	0718
		d. $2^2 \times 3$ = GCF	

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF PRIME NUMBERS BY SELECTING NUMBERS WHICH ARE PRIME. 0082

Choose and circle the letter that correctly lists the prime numbers from 2 to 10. 0719

a. 2,3,5,6,7
b. 2,3,4,7
c. 2,3,4,5,7
*d. 2,3,5,7
e. 2,3,4,7

Choose and circle the letter of the list that contains only prime numbers between 10 and 20. 0720

a. 11, 15, 19
b. 11, 13, 17
c. 11, 15, 17, 19
d. 11, 13, 15, 19
*e. 11, 13, 17, 19

Source: Addison Wesley, Bk. 5.

THE STUDENT WILL DEMONSTRATE KNOWLEDGE OF PRIME NUMBERS BY CORRECTLY COMPLETING FACTS ABOUT PRIME NUMBERS. 0083

Directions: Read the problem and circle the letter of the correct answer.

What number is both an even number and a prime number? 0721

a. 0
*b. 2
c. 3
d. 4

What two prime numbers have a difference of 1? 0722

a. 3,4
b. 1,2
c. 0,1
*d. 2,3

What two prime numbers have a difference of 3? 0723

a. 4,7
b. 6,9
*c. 2,5
d. 8,11

Source: Addison Wesley, p. 172.

THE STUDENT WILL RECALL THE CHARACTERISTICS OF PRIME NUMBERS BY IDENTIFYING THE STATEMENTS PERTAINING TO PRIMES. 0275

From the statements below select the one that does NOT apply to all prime numbers. 0724

*a. Prime numbers are always odd numbers.
b. Prime numbers have exactly two factors.
c. Prime numbers always have one as a factor.

Source: SRA

THE STUDENT WILL DEMONSTRATE KNOWLEDGE OF PRIME NUMBERS BY CORRECTLY IDENTIFYING FROM GIVEN ARRAYS THOSE THAT ARE PRIME NUMBERS. 0276

Select from the arrays listed below the array that indicates a prime number. 0725

a. O O O O O O
*b. O O O O O O O O O O O
c. O O O O O O O O O
d. O O O O O O O O O O O O O O O

Select from the arrays listed below, the array that indicates a prime number. 0726

a. O O O O
b. O
c. O O O O O O O
*d. O O O O O O O O O O O O O

Select from the arrays listed below, the array that indicates a prime. 0727

a. O O O O O O O O O O O O
b. O O O O O O O O O O O O O O O O O O O O O O
*c. O O O O O O O O O O O O O O O O O O O
d. O O O O O O O O O O O O O O O O O O O O O O O O

Select from the arrays listed below, the array that indicates a prime. 07

- *a. 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
- b. 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
- c. 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
- d. 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Select from the arrays listed below, the array that indicates a prime. 0729

- a. 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
- *b. 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
- c. 0 0 0 0 0 0 0 0 0 0 0 0 0 0
- d. 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Source: SRA

THE STUDENT WILL APPLY HIS KNOWLEDGE OF ARRAYS BY CORRECTLY IDENTIFYING A PRIME ARRAY FROM A LIST. 02

Select from the whole numbers listed below, the one for which only one array can be made. 0730

- a. 51
- *b. 47
- c. 39
- d. 35

Select from the whole numbers listed below, the one for which only one array can be made. 0731

- *a. 41
- b. 45
- c. 48
- d. 49

Select from the whole numbers listed below, the one for which only one array can be made. 0732

a. 75
b. 56
c. 87
*d. 61

Select from the whole numbers listed below, the one for which only one array can be made. 0733

a. 63
b. 54
c. 72
*d. 83

Select from the whole numbers listed below the one for which only one array can be made. 0734

a. 55
b. 98
*c. 83
d. 57

Select from the whole numbers listed below, the one for which only one array can be made. 0735

a. 0
*b. 2
c. 1
d. 4

Select from the whole numbers listed below, the one for which only one array can be made. 0736

*a. 3
b. 9
c. 0
d. 1

Source: SRA

THE STUDENT WILL RECALL THE CHARACTERISTICS OF NOT PRIMES (COMPOSITE NUMBERS) BY IDENTIFYING THE STATEMENTS PERTAINING TO NOT PRIMES. 0278

From the statements below select the one that does NOT apply to not prime numbers. 0737

a. Numbers that are not primes have more than two factors.
b. Numbers that are not primes are products of primes.
c. Numbers that are not primes always have 1 as a factor.
*d. Numbers that are not primes have only two factors.

Source: SRA

THE STUDENT WILL RECALL THAT WHOLE NUMBERS HAVING MORE THAN TWO FACTORS (ZERO EXCEPTED) ARE NOT PRIMES (COMPOSITE NUMBERS) BY IDENTIFYING THEM FROM A GIVEN LIST. 0279

Select from the arrays listed below the array that indicates a not prime number. 0738

a. O O O
b. O O
*c. O O O O O O
d. O O O O O

Select from the arrays listed below the array that indicates a NOT prime number. 0739

a. O O O O O O O
*b. O O O O O O O O O
c. O O O O O O O O O O O
d. O O O O O O O O O O O O O

Select from the arrays listed below the array that indicates a NOT prime number. 0740

*a. 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
b. 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
c. 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
d. 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Select from the arrays listed below the array that indicates a NOT prime number. 0741

a. 0 0 0 0 0 0 0 0 0 0 0 0 0
b. 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
*c. 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
d. 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Select from the whole numbers listed below, the one for which more than one array may be made. 0742

a. 29
b. 73
*c. 64
d. 47

Select from the whole numbers listed below the one for which more than one array may be made. 0743

a. 97
*b. 81
c. 37
d. 53

Select from the whole numbers listed below the one for which more than one array may be made. 0744

*a. 99
b. 89
c. 57
d. 79

Select from the whole numbers listed below the one for which more than one array may be made. 0745

a. 43
*b. 40
c. 31
d. 37

Select from the whole numbers listed below the one for which more than one array may be made. 0746

a. 19
b. 23
c. 17
*d. 27

Select from the whole numbers listed below the one for which more than one array may be made. 0747

a. 11
b. 19
*c. 25
d. 29

Select from the whole numbers listed below the one for which more than one array may be made. 0748

*a. 8
b. 13
c. 19
d. 11

Select from the whole numbers listed below the one for which more than one array may be made. 0749

a. 67
*b. 78
c. 53
d. 41

Select from the whole number listed below the one for which more than one array may be made. 0750

a. 29
*b. 39
c. 59
d. 79

Source: SRA

THE STUDENT WILL ANALYZE WHOLE NUMBERS TO CORRECTLY IDENTIFY PRODUCTS OF PRIMES. 0282

Analyze the groups of whole numbers and correctly select the group which identifies products of primes. 0751

a. 4, 11, 8, 6
b. 20, 15, 10, 5
*c. 8, 6, 4, 12
d. 12, 14, 9, 17

Analyze the groups of whole numbers and correctly select the group which identifies products of primes. 0752

a. 14, 22, 23, 25
*b. 26, 27, 10, 12
c. 15, 16, 29, 24
d. 30, 40, 21, 31

Analyze the groups of whole numbers and correctly select the group which identifies products of primes. 0753

a. 42, 25, 37, 18
b. 32, 47, 45, 54
c. 63, 74, 41, 38
*d. 64, 22, 72, 75

Analyze the groups of whole numbers and correctly select the group which identifies products of primes. 0754

a. 84, 89, 70, 73
b. 20, 59, 42, 19
c. 28, 25, 39, 61
*d. 52, 100, 49, 36

Analyze the groups of whole numbers and correctly select the group which identifies products of primes. 0755

a. 53, 26, 18, 22
b. 81, 83, 79, 70
*c. 25, 26, 27, 28
d. 65, 67, 49, 19

Analyze the groups of whole numbers and correctly select the group which identifies products of primes. 0756

a. 95, 96, 97, 98
*b. 62, 63, 64, 65
c. 69, 70, 71, 72
d. 41, 43, 77, 79

Analyze the groups of whole numbers and correctly select the group which identifies products of primes. 0757

a. 22, 14, 53, 72
b. 10, 2, 8, 16
*c. 34, 27, 56, 81
d. 33, 29, 23, 32

From the group of whole numbers between 9 and 28, analyze the numbers 11, 13, 17, 19 and 23, and correctly select the phrase that identifies this group. 0758

a. all the odd numbers
b. all the even numbers
*c. all the prime numbers
d. all the composite numbers

If 4 has exactly 3 factors, and 9 has exactly 3 factors analyze the groups of whole numbers listed below and select the group having exactly 3 factors. 0759

a. 10, 12, 14
b. 15, 21, 27
*c. 25, 49, 121
d. 25, 36, 49

If the first four products of primes are 4, 6, 8, and 9, analyze the groups below and identify the group that identifies the next four products of primes. 0760

a. 11, 13, 17, 19
*b. 10, 12, 14, 15
c. 10, 11, 12, 13

Source: SRA

THE STUDENT WILL ANALYZE THE SIEVE OF ERATOSTHENES AND IDENTIFY ITS CHARACTERISTICS FROM A LIST. 0283

If 11 and 13 are twin primes, and 17 and 19 are twin primes, analyze the Sieve of Erathsthenes and correctly identify the number of twin primes from the list. (SRA) 0761

a. two
b. four
*c. six
d. five

Using the Sieve of Erathsthenes identify the phrase that applies to the table. 0762

a. All numbers ending in 1,3,5,7,or 9 are primes.
b. All numbers are odd.
c. There are two groups of prime triplets.
*d. Twin primes are consecutive odd prime numbers.

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF DIVISIBILITY FACTS BY SELECTING THE RULES FOR DIVISIBILITY. 0227

Using the rule for divisibility by 2, identify the whole number which does not belong in this group. 0764

a. 24
b. 36
*c. 29
d. 40

Using the rule for divisibility by 2 identify the whole number which does not belong in this group. 0765

a. 336
b. 450
*c. 241
d. 998

Using the rule for divisibility by 2 identify the whole number which does not belong in this group. 0766

*a. 1007
b. 2796
c. 7842
d. 5339

Source: SRA

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF THE DIVISIBILITY RULE FOR 3 BY IDENTIFYING THE NUMBERS DIVISIBLE BY 3 FROM A GIVEN LIST.

Directions: Select which one of the following numbers is divisible by 3.

a. 2459
b. 3075
c. 2584
*d. 1497

a. 8974
b. 7504
*c. 9087
d. 5462

a. 3758
*b. 4629
c. 7628
d. 8002

*a. 2505
b. 3847
c. 5864
d. 3472

a. 25,846
b. 37,598
c. 43,294
*d. 58,740

a. 90,709
*b. 64,872
c. 83,864
d. 70,985

*a. 75,804
b. 86,009
c. 95,846
d. 87,235

0773

a. 75,097
b. 30,284
c. 27,563
*d. 85,662

0774

*a. 84,609
b. 37,462
c. 68,072
d. 40,069

0775

a. 50,684
b. 30,758
*c. 77,787
d. 67,666

0776

Directions: Select which one of the following numbers is NOT divisible by 3.

*a. 734
b. 606
c. 960
d. 348

0777

a. 846
b. 609
*c. 758
d. 945

0778

a. 8706 0779
b. 4932
*c. 6374
d. 9567

a. 9654 0780
b. 5766
c. 2838
*d. 5042

a. 97,608 0781
*b. 84,725
c. 76,374
d. 60,852

a. 64,008 0782
b. 98,763
*c. 84,032
d. 75,468

a. 30,009 0783
b. 58,395
c. 70,608
*d. 96,541

a. 46,938 0784
b. 26,847
c. 59,877
*d. 89,899

a. 60,597 0785
*b. 44,444
c. 55,089
d. 70,698

a. 34,269
b. 80,799 0786
*c. 75,877
d. 99,789

Source: SRA

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF THE DIVISIBILITY RULE FOR 6 BY IDENTIFYING THE NUMBERS DIVISIBLE BY 6 FROM A GIVEN LIST. 0289

Directions: Select which one of the following numbers is divisible by 6.

a. 2775
b. 2864 0787
*c. 3768
d. 5987

a. 6074
b. 9286 0788
c. 5875
*d. 6936

a. 758
b. 403 0789
c. 297
*d. 798

*a. 9984
b. 4039 0790
c. 5468
d. 2703

a. 27,086
b. 34,729 0791
*c. 75,642
d. 59,876

a. [illegible]7,496
*b. 29,850 0792
c. 85,623
d. 75,807

a. 96,542
b. 85,467 0793
c. 62,054
*d. 90,900

a. 90,004
*b. 80,406 0794
c. 30,700
d. 67,509

a. 34,906
b. 37,508 0795
*c. 50,070
d. 35,987

a. 98,563
b. 80,758 0796
*c. 99,006
d. 90,909

Directions: Select which of the following numbers is NOT divisible by 6.

a. 648
b. 336 0797
*c. 257
d. 976

a. 792
b. 990 0798
c. 804
*d. 279

a. 5,706
*b. 3,099 0799
c. 9,900
d. 9,090

*a. 6,778
b. 4,068 0800
c. 6,408
d. 7,668

a. 6,096
b. 9,786 0801
c. 8,976
*d. 8,066

a. 50,634
b. 42,756 0802
*c. 80,564
d. 75,306

a. 89,004
b. 85,800 0803
*c. 90,008

a. 90,750
*b. 82,468
c. 80,760
d. 76,806

0804

a. 25,374
*b. 99,074
c. 60,792
d. 89,772

0805

*a. 84,650
b. 64,386
c. 56,994
d. 76,788

0806

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF THE DIVISIBILITY RULE FOR 9 BY IDENTIFYING THE NUMBER DIVISIBLE BY 9 FROM A GIVEN LIST. 0290

Directions: Select from a given list of numbers the one that is divisible by 9.

a. 278
b. 465
*c. 333
d. 979

0807

a. 462
b. 306
c. 555
d. 330

0808

a. 898
b. 379 0809
c. 469
*d. 900

*a. 171
b. 25[illegible] 0810
c. 340
d. 258

a. 8466
b. 9077 0811
c. 7409
*d. 6381

a. 9777
b. 9563 0812
c. 9075
*d. 9054

a. 1009
b. 7457 0813
*c. 8532
d. 3688

a. 40,758
*b. 66,735
c. 39,740
d. 86,299

a. 79,455
b. 85,742 0815
*c. 38,799
d. 94,853

a. 90,897
b. 62,575 0816
*c. 89,667
d. 87,437

Directions: Select from a given list of numbers the one that is NOT divisible by 9.

*a. 578
b. 459 0817
c. 693
d. 702

a. 153
b. 252 0818
c. 936
*d. 638

a. 342
b. 225 0819
*c. 763
d. 333

a. 9990
b. 4077 0820
*c. 6546
d. 3564

a. 6003
*b. 6078 0821
c. 6066
d. 3303

a. 6822
b. 5904 0822
c. 9036
*d. 3158

a. 53,478
b. 77,985 0823
c. 90,099
*d. 60,758

a. 72,081
b. 77,778 0824
c. 99,999
*d. 76,799

a. 43,758
b. 90,270 0825
*c. 58,855
d. 43,569

a. 39,663
b. 57,042 0826
c. 80,145
*d. 22,222

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF THE DIVISIBILITY RULE OF WHOLE NUMBERS BY APPLYING THE RULE TO A GIVEN LIST OF NUMBERS. 0291

Directions: Without computing, place a check mark in the blank beside the quotients which are whole numbers.

$\frac{387}{3}$ __*__ 0827

$\frac{467}{2}$	____	0828
$\frac{756}{6}$	____	0829
$\frac{465}{5}$	*	0830
$\frac{844}{2}$	*	0831
$\frac{849}{9}$	____	0832
$\frac{756}{9}$	*	0833
$\frac{355}{5}$	*	0834
$\frac{846}{6}$	*	0835
$\frac{726}{3}$	*	0836
$\frac{754}{5}$	____	0837
$\frac{8046}{6}$	*	0838
$\frac{847}{9}$	____	0839

$\frac{3805}{10}$ ______ 0840

$\frac{4680}{3}$ ___*___ 0841

$\frac{5004}{9}$ ___*___ 0842

$\frac{6023}{3}$ ______ 0843

$\frac{7809}{6}$ ______ 0844

$\frac{3470}{10}$ ___*___ 0845

$\frac{8031}{3}$ ______ 0846

$\frac{500}{2}$ ___*___ 0847

$\frac{984}{6}$ ___*___ 0848

$\frac{4098}{3}$ ___*___ 0849

$\frac{8471}{2}$ ______ 0850

$\frac{9570}{10}$ ___*___ 0851

$\frac{7064}{3}$	___	0852
$\frac{9594}{9}$	*	0853
$\frac{7866}{6}$	*	0854
$\frac{3508}{5}$	___	0855
$\frac{1720}{9}$	___	0856
$\frac{5076}{6}$	*	0857
$\frac{7230}{3}$	*	0858
$\frac{6308}{2}$	*	0859
$\frac{7534}{3}$	___	0860
$\frac{2742}{6}$	*	0861
$\frac{5698}{9}$	___	0862
$\frac{2705}{10}$	___	0863

$\frac{8045}{5} \quad \underline{\quad * \quad}$ 0864

$\frac{7083}{9} \quad \underline{\quad * \quad}$ 0865

$\frac{3711}{6} \quad \underline{\qquad}$ 0866

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF GREATEST COMMON FACTORS BY SELECTING THEM FROM A GIVEN LIST. 0086

Directions: Circle the letter of the correct response.

The greatest common factor of 8 and 20 is: 0867

*a. 4
b. 5
c. 8
d. 2

The greatest common factor of 10 and 30 is: 0868

a. 1
b. 2
c. 5
*d. 10

The greatest common factor of 16 and 24 is: 0869

a. 2
b. 4
*c. 8
d. 16

Directions: Given a fraction, find the greatest common factor and put it in lowest terms.

The greatest common factor of 12/16 0870

*a. 4
b.
c. 3
d. 1

12/16 in lowest terms is 0871

a. 12/16
*b. 3/4
c. 10/14
d. 6/8

Greatest common factor of 5/15 0872

a. 3
b. 1
*c. 5
d. 15

5/15 in lowest terms is 0873

a. 5/15
*b. 1/3
c. 1/5
d. 3/15

The greatest common factor 18/24 0874

a. 9
b. 12
c. 3
*d. 6

18/24 in lowest terms is 0875

*a. 3/4
b. 6/8
c. 18/24
d. 9/12

The greatest common factor of 27/30 0876

a. 1
b. 9
c. 4
*d. 3

27/30 in lowest terms is 0877

a. 1/5
b. 3/10
*c. 9/10
d. 27/30

The greatest common factor is found 0878

a. by finding all the factors of the numerator and denominator.
b. by multiplying numerator and denominator by 2/2.
c. when the numerator and denominator are each less than 10.
*d. by finding the largest factor that both numerator and denominator contain.

A fraction is in lowest terms when 0879

a. the numerator and denominator are different numbers.
b. the only multiple the numerator and denominator have in common is 1.
c. the numerator is a prime number.
*d. the only factor the numerator and denominator have in common is one.

GIVEN A WHOLE NUMBER, THE STUDENT WILL SHOW ABILITY TO DISTINGUISH BETWEEN FACTORS AND MULTIPLES BY SELECTING THE FACTORS AND/OR MULTIPLES OF A GIVEN NUMBER. 0148

Directions: Circle the answer from the list of alternatives.

The factors of 12 are 0880

a. 0, 12, 24, 36, 48
b. 0, 1, 2, 3, 4, 6, 12
c. 1, 2, 4, 6, 12
*d. 1,2,3,4,6,12

The multiples of 8 are 0881

*a. 0,8,16,24
b. 1,2,4,8
c. 8,16,24,
d. 0,1,2,4,8

The multiples of 6 are 0882

a. 6,12,18,24
b. 1,2,3,6
c. 0,1,2,3,6
*d. 0,6,12,18,24

The factors of 4 are 0883

a. 0,1,2,4
b. 1,4,8,12,16
*c. 1,2,4
d. 1,2,3,4

The multiples of 5 are 0884

a. 0,1,5,10,15,20
*b. 0,5,10,15,20
c. 1,5,10,15,20
d. 10,15,19,23,28

The factors of 2 are 0885

a. 0,1,2
b. 1,2,4
c. 1,2,3,4,6,8
*d. 1,2

The number which all whole numbers have as a factor is 0886

*a. 1
b. 0
c. 2
d. 10

The number which all whole numbers have as a multiple is 0887

a. 1
*b. 0
c. 2
d. 10

S=8= {1,2,4,8}   T=6= {1,2,3,6} 0888
$S \cap T$ =

a. all the factors of S and T
b. Common multiples of S and T
c. All the multiples of S and T
*d. Common factors of S and T

$S = 8 = \{0,8.16,24\}$ $T = 6 = \{0,6,12,18,24\}$ 0889
$S \cup T$

a. common factors of S and T
b. all the factors of S and T
*c. all the multiples of S and T
d. common multiples of S and T

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF MULTIPLES BY SELECTING THE NUMBERS THAT CONTINUE THE GIVEN SET OF MULTIPLES. 0087

Directions: Circle the letter of the correct response.

Given 0,6,12,18,24,30... , select the multiples that continue the set to 60. 0890

a. 36,40,46,54,60
*b. 36,42,48,54,60
c. 36,40,46,50,56,60
d. 36,46,56,60

Given 0,3,6,9,12,15... , select the multiplesthat continue the set to 30. 0891

a. 18,23,27,30
b. 18,20,25,30
c. 18,20,24,28,30
*d. 18,21,24,27,30

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF MULTIPLES BY SELECTING THE MULTIPLES OF GIVEN NUMBERS. 0088

Directions: Match the given number with its multiples by placing the correct number of the set in front of the letter.

5	7	0892
2	4	0893
10	3	0894
9	8	0895
11	5	0896
3	12	0897
8	10	0898
7	6	0899

1. 0,6,12,24,36
2. 0,4,8,12,16
3. 0,12,24,36,48
4. 0,3,6,12,18
5. 0,7,14,21,18
6. 0,10,15,20,25
7. 0,6,12,18,24
8. 0,10,20,30,40
9. 0,8,16,24,32
10. 0,3,6,9,12
11. 0,5,10,15,20
12. 0,8,12,20,24

USING HIS KNOWLEDGE OF MULTIPLES, THE STUDENT CAN DETERMINE WHICH EQUATION GIVES THE BEST PROCEDURE FOR SOLVING WORD PROBLEMS. 0089

Directions: Read the problems and select the letter of the equation appropriate for best solving the problem.

Mr. Moses donated $10 to each of 6 charities. How much did he donate? 0900

a. $10+$10+$10+$10+$10+$10 = n
b. $10 + 6 = n
*c. $10 x 6 = n
d. 6+6+6+6+6+6+6+6+6+6 = n

Mary has 4 packages of candy. There are 14 pieces in each pack. How much candy does she have? 0901

a. 14 + 4 = m
*b. 14 x 4 = m
c. 14 + 14 + 14 + 14 = m
d. 4+4+4+4+4+4+4+4+4+4+4+4+4+4 = m

THE STUDENT WILL DEMONSTRATE HIS ABILITY TO EMPLOY MULTIPLES BY SOLVING WORD PROBLEMS INVOLVING MULTIPLES. 0090

Directions: Read the problems and select the correct answer.

Each of 5 boys on a baseball team struck out three times during a game. How many strike-outs did they make? 0902

a. 8
b. 10
c. 5
*d. 15

Jack has 3 insect collections with 12 bugs on each frame. How many insects does Jack have? 0903

a. 15
*b. 36
c. 24
d. 12

Jill wants to buy 5 books that cost $1.00 each. How much must she save before she can buy them all? 0904

*a. $5.00
b. $10.00
c. $1.00
d. $5.50

Joe has 9 quarters in his pocket. How much money does he have? 0905

a. $2.00
*b. $2.25
c. $2.50
d. $2.75

GIVEN TWO WHOLE NUMBERS, THE STUDENT WILL DEMONSTRATE HIS ABILITY TO DISTINGUISH BETWEEN GREATEST COMMON FACTOR AND LEAST COMMON MULTIPLE BY SELECTING THE GREATEST COMMON FACTOR OR LEAST COMMON MULTIPLE OF THE TWO NUMBERS. 0146

Directions: Using the information provided circle the letter that answers each question.

Given: $8 = \{1,2,4,8,\}$ $6 = \{1,2,3,6\}$
The greatest common factor is 0906

a. $\{1,2,8\}$
b. $\{1,2\}$
*c. $\{2\}$
d. $\{8\}$

Given: $8 = \{0,8,16,24,32\}$ $6 = \{0,6,12,18,24,30\}$
The least common multiple is 0907

a. $\{24\}$
*b. $\{0\}$
c. $\{12\}$
d. $\{16\}$

Given: $9 = \{1,3,9\}$ $12 = \{1,2,3,4,6,12\}$
The least common factor is 0908

a. $\{3\}$
b. $\{9\}$
c. $\{12\}$
*d. $\{1\}$

Given: $9 = \{0,9,18,27,36\}$ $12 = \{0,12,24,36\}$
The least common multiple greater than zero 0909

a. $\{12\}$
*b. $\{36\}$
c. $\{0\}$
d. $\{9\}$

ADDITION AND SUBTRACTION

WHOLE NUMBER ADDITION

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF MULTIPLE DIGIT ADDENDS AND SUMS BY SOLVING ADDITION PROBLEMS AND EQUATIONS INVOLVING MULTIPLE DIGIT ADDENDS AND SUMS. 0043

In the equation $n + n = 6$, n is called 0910

a. a sum
*b. an addend
c. a factor
d. a product

In order to find the solution for n in the equation $n - 3 = 12$, you would 0911

a. subtract
b. multiply
c. divide
*d. add

Finding the sum does not mean to: 0912

a. have a union of sets
*b. find a missing addend
c. solve for total members
d. join all addends into a new set

The sum of the addends 800 + 190 + 18 will be __________ digits. 0913

a. two
b. three
*c. four
d. five

The sum of the addends $\begin{array}{r}123\\ \underline{191}\end{array}$ is 0914

*a. 314
b. 334
c. 324
d. 304

The sum of the addends $\begin{array}{r}943\\ \underline{383}\end{array}$ is 0915

a. 1216
*b. 1326
c. 1226
d. 1316

The sum of the addends 126 + 352 = 0916

a. 467
b. 468
c. 477
*d. 478

The addends are 4930 and 2190. Their sum equals 0917

a. 7020
b. 7030
*c. 7120
d. 7130

The sum is _______ digits for addends 9647 and 8355. 0918

a. three
b. four
*c. five
d. six

Find the sum of $\begin{array}{r}830\\ 26\\ 985\\ \underline{31}\end{array}$ 0919

*a. 1872
b. 1962
c. 1772
d. 1862

1608 + 4634 = $\boxed{}$ 0920

a. 6232
b. 5242
c. 5232
*d. 6242

$94.62 + $53.08 = ☐ 0921

a. $147.60
b. $14778
c. $14760
*d. $147.70

$70.95 + $94.63 = ☐ 0922

a. $164.68
b. $16558
*c. $165.58
d. $16458

Find the sum of: 0923

$2.50
3.80
.96
.75
5.80

a. $12.75
*b. $13.81
c. $13.71
d. $12.81

Find the sum of: 0924

2178
3645
1866

*a. 7689
b. 7588
c. 7679
d. 7589

Find the sum: 0925

23
979
57
164

a. 1023
b. 1123
*c. 1223
d. 1222

$27 + 8 + 65 + 97 = \square$ 0926

a. 164
*b. 197
c. 186
d. 177

$\square = 36 + 65 + 75 + 86$ 0927

*a. 262
b. 252
c. 242
d. 272

Find the sum: $\begin{array}{r} 200 \\ 9080 \\ 9915 \\ 247 \\ \underline{60} \end{array}$ 0928

a. 19492
b. 19,512
c. 19,402
*d. 19,502

Find the sum: $\begin{array}{r} 5617 \\ 5908 \\ \underline{7346} \end{array}$ 0929

a. 17871
b. 17872
*c. 18871
d. 18771

$765 + 36 + 75 + 800 = \square$ 0930

*a. 1676
b. 1575
c. 1666
d. 1576

$\boxed{\quad\quad} = 700 + 800 + 600 + 900$ 0931

a. 300
b. 30,000
*c. 3,000
d. 2900

$1600 + 190 + 13 = \boxed{\quad\quad}$ 0932

a. 1800
*b. 1803
c. 1793
d. 1893

$\boxed{\quad\quad} = 58 + 900 + 150 + 43$ 0933

*a. 1151
b. 1050
c. 1150
d. 1041

$667 = \boxed{\quad\quad} - 487$ 0934

a. 180
*b. 1154
c. 280
d. 1054
e. 170

$\boxed{\quad\quad} - 468 = 342$ 0935

*a. 810
b. 126
c. 26
d. 800
e. 116

$\boxed{\qquad} - 99 = 109$ 0936

a. 200
b. 100
c. 10
*d. 208
e. 90

$6334 = \boxed{\qquad} - 1668$ 0937

*a. 8002
b. 4666
c. 8000
d. 4776
e. 5666

Find the sum: $\begin{array}{r} 432 \\ 32450 \\ 3400 \\ 17626 \\ \underline{500} \end{array}$ 0938

*a. 54,408
b. 43418
c. 52408
d. 43408

Find the sum: $\begin{array}{r} 59620 \\ 37651 \\ 28642 \\ 39746 \\ \underline{29375} \end{array}$ 0939

a. 195024
b. 194934
*c. 195034
d. 194034

19003
6754
Find the sum: 28031 0940
702
5975

a. 59566
*b. 60465
c. 59466
d. 60365

4300
7500
Find the sum: 9060 0941
2735
4327
3800

*a. 31722
b. 30712
c. 31622
d. 30722

93752 0942
16820
34919
58606
90408

a. 294495
b. 284505
c. 284495
*d. 294505

4265 + 38 + 700 + 85 = ☐ 0943

a. 4088
b. 4987
*c. 5088
d. 5078

☐ = 9000 + 75 + 865 + 7646 + 86 0944

*a. 17672
b. 16672
c. 17572
d. 16662

3716 + 143 + 59 + 400 = ☐ 0945

a. 3318
b. 4308
c. 3208
*d. 4318

5,327 + 86 + 300 + 702 = ☐ 0946

a. 6305
*b. 6415
c. 5415
d. 6405

900 + 7081 + 63 + 126 + 39 = ☐ 0947

a. 7209
b. 8199
*c. 8209
d. 7109

☐ = 5000 + 137 + 609 + 82 + 1414 0948

a. 6232
*b. 7242
c. 6342
d. 7132

Given the sum 5292, possible addends rounded off to the nearest hundred could be: 0949

a. 2500 + 2000
b. 2500 + 2500
c. 2600 + 2600
*d. 2300 + 3000

The sum for 3 addends is 895. The addends rounded off to the nearest hundred could be: 0950

a. 500 + 300 + 200
b. 600 + 300 + 100
*c. 400 + 200 + 300
d. 300 + 300 + 200

600 + 100 + 200 = $\boxed{}$. These addends were rounded off to the nearest hundred. The possible sum could be 0951

a. 951
*b. 879
c. 849
d. 981

(18 + 18) = $\boxed{}$ − 76 0952

a. 100
b. 40
*c. 112
d. 102
e. 50

946 = $\boxed{}$ − (38 + 149) 0953

*a. 1133
b. 759
c. 753
d. 1033
e. 769

(536 + 232) = $\boxed{}$ − 604 0954

a. 1362
b. 164
c. 154
*d. 1372
e. 64

$1037 = \square - (859 + 36)$ 0955

a. 132
*b. 1932
c. 232
d. 142
e. 1832

$385 = \square - (109 + 97)$ 0956

*a. 591
b. 79
c. 189
d. 581
e. 89

$(438 + 297) = \square - 509$ 0957

a. 226
*b. 1244
c. 236
d. 1234
e. 206

$$\begin{array}{r} \square\square\square \\ -\underline{3\;8\;3} \\ 5\;6\;2 \end{array}$$

0958

a. 180
*b. 945
c. 280
d. 844
e. 220

$$\begin{array}{r} \square\square\square \\ -\underline{7\;0\;6} \\ 4\;9\;3 \end{array}$$

0959

a. 13
b. 313
c. 213
*d. 1199
e. 1193

$$\begin{array}{r} \square\square\square\square \\ -\ 964 \\ \hline 728 \end{array}$$ 0960

a. 232
*b. 1692
c. 242
d. 246
e. 1682

$$\begin{array}{r} \square\square\square\square \\ -\ 1637 \\ \hline 904 \end{array}$$ 0961

*a. 2541
b. 733
c. 633
d. 2531
e. 2633

$$\begin{array}{r} \square\square\square\square\square \\ -\ 7389 \\ \hline 5007 \end{array}$$ 0962

a. 12386
b. 11396
c. 2382
d. 2396
*e. 12396

$$\begin{array}{r} \square\square\square\square \\ -\ 2853 \\ \hline 1509 \end{array}$$ 0963

a. 4352
*b. 4362
c. 3354
d. 1344
e. 3342

THE CHILD WILL EVIDENCE HIS ABILITY TO DISTINGUISH BETWEEN THE BASIC PRINCIPLES OF ADDITION BY CORRECTLY CATEGORIZING A GIVEN SET OF EQUATIONS. 0121

Directions: Look at the equation and select the principle which the equation demonstrates.

$7/8 + 8 = 8 + 7/8$ 0964

a. O-principle
*b. Commutative principle
c. Associative principle

$2/3 + 0/6 = n$ 0965

*a. O-principle
b. Commutative principle
c. Associative principle

$3/4 + n = 6/10 + 3/4$ 0966

a. O principle
*b. Commutative principle
c. Associative principle

$(1/8 + 3/8) + 5/8 = 1/8 + (3/8 + n)$ 0967

a. O principle
b. Commutative principle
*c. Associative principle

$5/8 + n = 5/8$ 0968

*a. O principle
b. Commutative principle
c. Associative principle

$n + (3 + \frac{1}{2}) = (2 + 3) + \frac{1}{2}$ 0969

a. 0 principle
b. Commutative principle
*c. Associative principle

$(5/7 + 6/7) + n = 5/7 + (6/7 + 3/7)$ 0970

a. 0 principle
b. Commutative principle
*c. Associative principle

$n + 1/3 = 1/3 + 6/5$ 0971

a. 0 principle
*b. Commutative principle
c. Associative principle

$6/3 + 0 = n$ 0972

*a. 0 principle
b. Commutative principle
c. Associative principle

$1/10 + (6/10 + 3/10) = (n + 6/10) + 3/10$ 0973

a. 0 principle
b. Commutative principle
*c. Associative principle

Source: Addison-Wesley, Book 5, pp. 258-259.

THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF THE ADDITION PROCESS BY ANALYZING AN INCOMPLETE PROBLEM AND SELECTING THE CORRECT DIGITS THAT MAKE THE PROBLEM TRUE. 0142

Direction: Below is part of an account from a check-book. Find the numerals that are missing.

$$\begin{array}{r} \$\ 48.3\underline{a} \\ 56.\underline{b}9 \\ 8\underline{c}7.62 \\ 6.\underline{d}1 \\ 53\underline{e}.24 \\ \hline 15\underline{f}9.10 \end{array}$$

The missing numeral for a is 0974

a. 0
b. 1
*c. 4
d. 8
e. 5

The missing numeral for b is 0975

a. 2
b. 0
c. 9
d. 4
*e. 3

The missing numeral for c is 0976

a. 7
*b. 9
c. 8
d. 2
e. 3

The missing numeral for d is 0977

*a. 5
b. 6
c. 0
d. 3
e. 8

The missing numeral for e is 0978

a. 9
*b. 0
c. 1
d. 5
e. 3

The missing numeral for f is 0979

a. 7
b. 6
c. 0
*d. 3
e. 4

Source: Addison Wesley

THE STUDENT WILL APPLY HIS KNOWLEDGE OF THE ADDITION PROCESS TO DETERMINING THE CORRECTNESS OF COMPLETED GIVEN PROBLEMS. 0143

Directions: Below is part of an account from a check book. Determine whether or not it has been added correctly.

$ 57.63
394.82
647.31
29.07
49.70
$1028.33

The correct answer is: 0980

a. $1028.33
b. $1028.53
c. $1078.33
*d. $1178.53
e. $1128.53

$ 35.82 0981
610.93
49.06
753.79
8509.37
$9958.97

The correct answer is:

a. $8958.97
*b. $9958.97
c. $9847.87
d. $8857.97
e. $9948.97

THE STUDENT WILL DEMONSTRATE UNDERSTANDING THAT YOU CAN NOT CARRY A NUMERAL AS LARGE AS THE NUMBER OF ADDENDS BY SELECTING A STATEMENT THAT REFLECTS THIS RULE. 0182

Directions: Circle the letter in front of the numeral which correctly completes the sentence.

Given two addends the greatest number that could be carried to hundreds column is 0982

a. 0
*b. 1
c. 2
d. 3

Given four addends the greatest number that could be carried to tens column is 0983

a. 1
b. 2
*c. 3
d. 4

Given five addends the greatest number that could be carried to thousands column is 0984

a. 2
b. 3
*c. 4
d. 5

Given four addends the greatest number that could be carried to hundreds column is 0985

a. 2
*b. 3
c. 4
d. 5

Given three addends the greatest number that could be carried to millions column is 0986

*a. 2
b. 3
c. 4
d. 5

Given five addends the greatest number that could be carried to tens column is 0987

a. 2
b. 3
*c. 4
d. 5

THE STUDENT WILL APPLY HIS KNOWLEDGE OF THE "PUT IN, TAKE OUT" GAME TO ADD NEGATIVE NUMBERS. 0161

Directions: Given: A bag containing an unknown number of bottle caps and many more caps laying loose on a table next to the bag. Solve the following problems to find if you have more or less in the bag than when you started.

put in 5, take out 3 0988

- *a. +2
- b. -2
- c. 0
- d. +5

put in 3, take out 1 0989

- a. +3
- *b. +2
- c. 0
- d. -2

put in 4, take out 5 0990

- a. +1
- b. 0
- c. +9
- *d. -1

put in 6, take out 6 0991

- a. +12
- *b. 0
- c. -12
- d. +1

put in 3, take out 7: +3 + -7 = 0992

- a. +4
- b. 0
- *c. -4
- d. +3

put in 5, take out 4: +5 + -4 = 0993

- a. +5
- b. 0
- c. -4
- *d. +1

+6 + -9 = 0994

*a. -3
b. _6
c. 0̄
d. -9

+6 + -5 + =3 = 0995

a. +1
b. -2
*c. +4
d. 0

+3 + -7 + +1 + -2 = 0996

*a. -5
b. -4
c. -3
d. 0

+5 + -4 + +3 + -4 = 0997

a. +1
b. -4
c. -1
*d. 0

-3 + -4 + -2 + -2 = 0998

a. +11
*b. -11
c. 0
d. -1

Source: Dr. A. Hart.

WHOLE NUMBER SUBTRACTION

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF MULTIPLE DIGIT NUMBERS BY SOLVING SUBTRACTION PROBLEMS AND EQUATIONS INVOLVING MULTIPLE DIGIT NUMBERS. 0044

In order to solve for n in the equation $n + 16 = 40$, you 0999

a. add
*b. subtract
c. divide
d. multiply

If you know the sum and one addend you _________ to find the other addend. 1000

a. add
*b. subtract
c. multiply
d. divide

Solving a subtraction problem does NOT involve 1001

a. multiple addends
b. differences
*c. factors
d. sums

Solve for the difference: $\begin{array}{r}710\\ \underline{-191}\end{array}$ 1002

a. 609
*b. 519
c. 629
d. 509

Find the difference: $\begin{array}{r}128\\ \underline{-\ 72}\end{array}$ 1003

*a. 56
b. 200
c. 190
d. 50
e. 66

619
The difference for: - 342 is: 1004

a. 961
b. 375
c. 951
*d. 277
e. 267

813
- 242 is equal to: 1005

*a. 571
b. 1155
c. 1255
d. 471
e. 351

6113
The difference for - 985 is 1006

a. 7098
b. 6998
c. 5238
*d. 5128

1610
Solve for the difference in - 905 1007

a. 2515
*b. 705
c. 1605
d. 605

7614
- 836 equals: 1008

a. 7440
b. 6878
*c. 6778
d. 7888

The difference for $\begin{array}{r}1006\\ -\underline{497}\end{array}$ is: 1009

a. 1493
b. 1503
c. 610
*d. 509
e. 513

The answer to $\begin{array}{r}9274\\ -\underline{392}\end{array}$ is: 1010

*a. 8882
b. 9666
c. 8982
d. 8676

If 653-278 = $\boxed{}$, then $\boxed{}$ = 1011

*a. 375
b. 931
c. 385
d. 821
e. 485

If $\boxed{}$ = 967 - 78, then $\boxed{}$ = 1012

a. 1045
b. 999
*c. 889
d. 879

If 823 - 59 = $\boxed{}$, then $\boxed{}$ = 1013

a. 882
*b. 764
c. 774
d. 762
e. 862

If ☐ = 7013 - 967, then ☐ = 1014

a. 7980
b. 6146
c. 7970
*d. 6046
e. 6140

If $12.93 - $3.04 = ☐ , then ☐ = 1015

*a. $9.89
b. $16.07
c. 1097
d. 987
e. $987

Subtract $14.69 from $94.25 1016

*a. $79.56
b. $108.94
c. 7954
d. 10856
e. $80.54

$70.13
$\underline{-\ 9.25}$ equals: 1017

a. $79.38
b. $61.88
c. $60.98
*d. $60.88

$96.78
$\underline{-\ 3.62}$ equals: 1018

a. $93.00
*b. $93.16
c. $99.40
d. $100.36

9000 - 65 = △ △ = 1019

*a. 8935
b. 9065
c. 8945
d. 9045

△ = 6010 - 671 △ = 1020

a. 5949
b. 6681
c. 5349
*d. 5339

If △ = 2589 - 198, then △ = 1021

*a. 2391
b. 2787
c. 2491
d. 2397

If 5067 - 268 = △ , then △ = 1022

a. 4899
b. 5335
*c. 4799
d. 4809

47357
-19266 is: 1023

*a. 28091
b. 38191
c. 28191
d. 27091
e. 37091

37622
-393 equals: 1024

a. 38915
*b. 37229
c. 37339
d. 38015

50091
-3487 equals: 1025

a. 46614
b. 47614
c. 53578
*d. 46604
e. 47604

730064
- 5079 equals: 1026

a. 735143
*b. 724985
c. 734995
d. 735133
e. 725085

900064
- 395 equals: 1027

*a. 899669
b. 900459
c. 900359
d. 890779
e. 899679

603942
-10864 equals: 1028

a. 613806
b. 592988
*c. 593078
d. 593178

The difference for 105660 - 99052 is: 1029

*a. 6608
b. 16608
c. 6618
d. 204712
e. 194712

5,975 from 160,033 is: 1030

a. 155058
b. 165168
c. 166008
*d. 154058

If 9673 - 7456 = ☐ , then ☐ = 1031

a. 2227
b. 2239
*c. 2217
d. 2229

If ☐ = 5629 - 3043, then ☐ = 1032

a. 2566
*b. 2586
c. 2686
d. 2666

If ☐ = 6502 - 1795, then ☐ = 1033

*a. 4707
b. 5817
c. 7297
d. 4817

If 3003 - 1905 = ☐ , then ☐ = 1034

a. 2098
b. 4908
c. 1108
*d. 1098

If 7049 - 1209 = ☐ , then ☐ = 1035

- a. 8258
- b. 6830
- *c. 5840
- d. 6840
- e. 8248

If ☐ = 8096 - 4307, then ☐ = 1036

- a. 12303
- *b. 3789
- c. 4781
- d. 12403
- e. 3799

If ☐ = 4205 - 1092, then ☐ = 1037

- *a. 3113
- b. 3293
- c. 3213
- d. 3193

If 7007 = 1070 = ☐ , then ☐ = 1038

- a. 6937
- b. 8077
- *c. 5937
- d. 8137

If 396 + ☐ = 500, then ☐ = 1039

- a. 896
- b. 296
- *c. 104
- d. 214

If ☐ + 257 = 296, then ☐ = 1040

a. 553
b. 61
*c. 39
d. 43
e. 453

If 532 + ☐ = 703, then ☐ = 1041

a. 1235
b. 275
*c. 171
d. 231
e. 1231

If ☐ + 406 = 629, then ☐ = 1042

a. 1023
*b. 223
c. 235
d. 1035

If $5.28 + ☐ = $13.45, then ☐ = 1043

a. 817
b. 1873
*c. $8.17
d. $18.73

If ☐ + $17.15 = $24.30, then ☐ = 1044

*a. $7.15
b. 715
c. $715
d. $7.25
e. 725

If 6321 + ☐ = 7099, then ☐ = 1045

*a. 778
b. 1778
c. 678
d. 1378
e. 13420

If ☐ + 136 = 8105, then ☐ = 1046

a. 8241
b. 8009
c. 7979
*d. 7969

If ☐ + 743 = 1069, then ☐ = 1047

a. 1712
*b. 326
c. 1702
d. 1806
e. 306

If 9826 + ☐ = 17602, then ☐ = 1048

*a. 7776
b. 8826
c. 7814
d. 8786

If ☐ + 36 = (571 - 403), then ☐ = 1049

a. 168
*b. 132
c. 137
d. 156

If $24 + \boxed{} = (178 - 64)$, then $\boxed{} =$ 1050

*a. 90
b. 100
c. 40
d. 80

$(75 - 16) + \boxed{} = 300$ 1051

a. 61
b. 359
c. 59
*d. 241

$\boxed{} + (65 - 18) = 800$ 1052

*a. 753
b. 847
c. 883
d. 747

$\boxed{} + 76 = (96 - 3)$ 1053

a. 110
*b. 17
c. 100
d. 27
e. 7

$(681 - 392) + \boxed{} = 295$ 1054

a. 584
b. 16
c. 474
*d. 6
e. 289

$\boxed{} + (1043 - 867) = 475$ 1055

*a. 299
b. 651
c. 300
d. 176

$5642 + \boxed{} = (9550 - 3550)$ 1056

a. 600
b. 11642
*c. 358
d. 908

$1357 + \boxed{} = (4620 - 974)$ 1057

*a. 2289
b. 3646
c. 5003
d. 1380

$(8061 - 7143) = \boxed{} + 759$ 1058

*a. 159
b. 918
c. 1677
d. 269

$$\begin{array}{r} 1\ 7\ 6 \\ -\boxed{}\boxed{}\boxed{} \\ \hline 2\ 7 \end{array}$$ equals: 1059

a. 193
*b. 149
c. 203
d. 159

$$\begin{array}{r} 3\;8\;7 \\ -\,\square\square\square \\ \hline 1\;1\;9 \end{array}$$ equals: 1060

*a. 268
b. 506
c. 496
d. 278

$$\begin{array}{r} 8\;5\;6 \\ -\,\square\square\square \\ \hline 3\;6\;5 \end{array}$$ equals: 1061

a. 1211
b. 511
c. 1121
*d. 491

$$\begin{array}{r} 7\;0\;3 \\ -\,\square\square\square \\ \hline 6\;7 \end{array}$$ equals: 1062

a. 746
b. 770
*c. 636
d. 646

$$\begin{array}{r} 9\;2\;6 \\ -\,\square\square\square \\ \hline 6\;7\;9 \end{array}$$ equals: 1063

a. 1595
*b. 247
c. 1605
d. 357

$$\begin{array}{r} 5\;0\;7\;0 \\ -\,\square\square\square\square \\ \hline 1\;9\;7\;1 \end{array}$$ equals: 1064

*a. 3099
b. 7041
c. 4109
d. 3199

$$\begin{array}{r} 9\;0\;0\;6 \\ -\,\square\,\square\,\square\,\square \\ \hline 6\;5\;7 \end{array}$$ equals: 1065

a. 8463
b. 8459
c. 9663
*d. 8349

$$\begin{array}{r} 1\;0\;0\;0\;3 \\ -\,\square\,\square\,\square\,\square\,\square \\ \hline 8\;5\;5 \end{array}$$ equals: 1066

a. 10258
*b. 9148
c. 9258
d. 10858

THE STUDENT CAN DEMONSTRATE KNOWLEDGE OF GENERAL OPERATIONS IN SOLVING SUBTRACTION PROBLEMS. 0045

If you substitute 1 for the unknown, which of these equations is NOT true? 1067

a. $n + n = 2$

b. $\frac{n + 1}{2} = 2 - n$

c. $2 - n = n$

d. $n = (1 + 1) - n$

*e. $n = n - 2$

$(36 - 22) + \square = 195$ 1068

$\square$ does NOT equal:

a. $[(10 \times 10) + (9 \times 9)]$
b. $9200 - 19)$
*c. $[9 \times (10 \times 10) + 1]$
d. $[(90 \times 2) + 1]$
e. $(10^2 + 9^2)$

$\boxed{} + (782 - 93) = 946$ 1069

$\boxed{}$ does not equal:

a. $(10^2 \times 2) + (2 \times 5^2) + 7$
b. $(50 \times 40) + 50 + 7$
c. $300 - [(6 \times 7) + 1]$
*d. $(10 \times 10 \times 2) + (5 \times 5 \times 2) - 7$
e. $(5 \times 50) + (2 \times 3) + 1$

One addend on the cash register receipt is missing: 1070

$ 3.25
16.08
100.57
???.??
$135.98

The addend is:

a. $ 3.25
*b. 16.08
c. 100.57
d. 35.41
e. 19.33

Find the missing addend on the sales receipt. 1071

$ 65.22
4.75
73.80
206.39
???.??
$ 369.95

a. $ 20.00
b. 18.81
*c. 19.79
d. 21.16

$ 7.82
43.09
?????
79.57
34.88
$ 200.54 1072

The missing item is:

- *a. $35.18
- b. 34.88
- c. $43.08
- d. 40.28

$ 1.57
3.40
.23
1.09
26.80
?????
108.98 1073

The sale missing is:

- a. $ 48.03
- b. $ 57.08
- c. $ 58.01
- *d. $ 47.93

THE STUDENT WILL DEMONSTRATE HIS ABILITY TO CHANGE MIXED NUMERALS TO A DIFFERENT FORM IN ORDER TO COMPLETE SUBTRACTION BY SELECTING RHE MISSING NUMBER. 0122

Directions: Choose the number that makes the numerator correct.

9½ = 9 5/10 = 8 n/10 1074

- a. 6
- *b. 15
- c. 13

7¼ = 7 3/12 = 6 n/12 1075

a. 4
b. 10
*c. 15

3 1/3 = 3 3/9 = 2 n/9 1076

*a. 12
b. 6
c. 5

5 = 5 0/8 = 4 n/8 1077

a. 0
b. 5
*c. 8

8 5/6 = 8 15/18 = 7 n/18 1078

a. 16
b. 30
*c. 33

1 = 1 0/10 = n/10 1079

*a. 10
b. 1
c. 0

4 3/8 = 3 n/16 1080

a. 11
*b. 22
c. 34

2 1/3 = 1 n/12 1081

a. 3
b. 4
*c. 16

5½ = 4 n/6 1082

a. 3
b. 6
*c. 9

3 3/5 = 2 n/15 1083

a. 15
*b. 24
c. 33

Source: Addison-Wesley Bk. 5 - p. 262.

THE STUDENT WILL DEMONSTRATE HIS ABILITY TO WORK RATIONAL NUMBER SUBTRACTION PROBLEMS WHICH REQUIRE BORROWING BY CHOOSING THE CORRECT ANSWER. 0123

Directions: Choose the correct answer.

8 1/3 - 2 5/6 = n, n = 1084

a. 6 4/3
*b. 5½
c. 6 3/6

9 2/3 - 6 5/6 = n, n = 1085

*a. 2 5/6
b. 3 1/6
c. 3 3/6

6 7/9 - 5 = n, n = 1086

a. 1 0/9
b. 1
*c. 1 7/9

8 5/6 - 7 7/8 = n, n= 1087

a. 1 2/2
*b. 23/24
c. 35/48

19 2/3 - 5 11/12 = n, n= 1088

*a. 13 3/4
b. 14 9/15
c. 13 9/11

36 1/3 - 29 17/18 = n, n = 1089

a. 7 16/15
*b. 6 7/18
c. 6 16/18

83 - 42 7/8 = n, n = 1090

*a. 40 1/8
b. 41 7/8
c. 40 7/8

61 4/5 - 39 9/10 = n, n = 1091

a. 22½
b. 22 1/10
*c. 21 9/10

86 7/15 - 58 9/10 = n, n = 1092

- *a. 27 17/30
- b. 28 2/15
- c. 28

93 - 39 9/10 = n, n = 1093

- a. 52 1/10
- b. 52 9/10
- *c. 53 1/10

Source: Addison-Wesley Bk. 5. p. 262.

WHOLE NUMBER ADDITION AND SUBTRACTION

THE STUDENT CAN APPLY THE PROPERTIES OF ADDITION AND SUBTRACTION BY SOLVING GIVEN PROBLEMS. 0041

There is one false statement. It is 1094

*a. 3-2 = 2-3
b. 3 + (2+1) = (3+1) + 2
c. (4+5) + 2 = (4+5) + 2
d. 14 + 3 = 3 + 14
e. 15 - 7 = 8 + 0

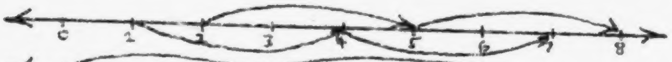
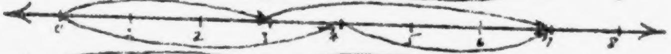
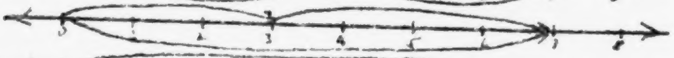
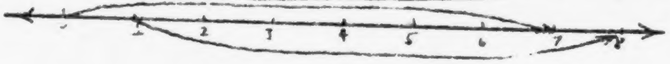
Commutative pertains to order. Which of the following equations shows a true commutative statement? 1095

a. 6 - 3 = 3 - 6
b. 63 - 7 = 7 x 9
c. (3+6) + 2 = (2+6) + 3
*d. 6 + 3 = 3 + 6

The zero principle of addition is shown best when 1096

a. the answer is zero
b. one addend is unknown
*c. the sum equals other addend
d. one addend is zero

The number line that proves the commutative property of addition is: 1097

a.

*b.

c.

d.


The associative property 1098

a. commutes addends
b. shows order of addends
c. has several addends
*d. regroups addends

One equation shows the associative property of $9 + 9 = 8 + 10$ 1099

*a. $(8+1) + 9 = 8 + (1 + 9)$
b. $9 + 3 + 6 = 8 + 9 + 1$
c. $(3 \times 3) + (3 \times 3) = 9 + (3 \times 3)$
d. $(3+6) + 9 = (3+5) + 10$

Match the equations in Column I with the equation in Col. II that best show the associative properties of the first equations.

Column I

__c__ $6+5 = 7+4$ 1100
__d__ $7 + 4 = 8 + 3$ 1101
__a__ $7+4 = 10 + 1$ 1102

Column II

a. $7 + (3+1) = (7 + 3) + 1$
b. $7 + (4+1) = (7 + 4) + 1$
c. $6 + (1+4) = (6 + 1) + 4$
d. $7 + (1+3) = (7 + 1) + 3$

THE STUDENT WILL DEMONSTRATE HIS COMPREHENSION OF EQUATIONS BY CHOOSING THE CORRECT EQUATION FOR SOLVING A GIVEN WORD PROBLEM. 0262

Directions: Circle the letter of the correct equation needed to solve each word problem.

You gave away 9 apples and have 6 left. How many apples did you have at the start? 1103

a. $9 - 6 = 3$
*b. $6 + 9 = 15$
c. $6 + 3 = 9$

Jane and Sue each had 10 cents, Mary had 9 cents. How much money did the girls have all together? 1104

*a. 10 + 9 + 10 = 29
b. 20 - 9 = 11
c. 9 + 10 = 19

John has 13 cents. He wants to buy a 25¢ toy. How much more money does he need? 1105

a. 12 + 13 = 25
b. 25 - 12 = 13
*c. 25 - 13 = 12

Karen has 20 crayons, Joan has 12 crayons, Mary has 10 crayons. How many more crayons have Karen and Mary than Joan? 1106

*a. 20 + 10 - 12 = 18
b. 20 + 12 - 10 = 22
c. 10 + 12 - 20 = 2

Terry broke 6 of her 12 crayons, Jean broke 3 of her 9 crayons, Beth broke 4 of 8 crayons. How many crayons were broken? 1107

a. 12 + 9 + 8 = 29
b. 9 + 4 + 6 = 19
*c. 6 + 3 + 4 = 13

Sue has 19 pieces of candy if she gives a piece to each of her 4 girl friends and 5 boys. How many pieces will she have left? 1108

a. 19 - 10 = 9
*b. 19 - 5 - 4 = 10
c. 19 + 5 + 4 = 28

Laurie has 30 cents if she buys a 5 cent eraser, a 10 cent pad of paper. How much change should she receive? 1109

a. 5 + 10 + 30 = 45¢
b. 30 - 10 = 20¢
*c. 30 - 15 = 15¢

Jane bought 12 red apples, 6 oranges, 3 pears, 6 green apples and 4 plums. How many apples did Jane buy? 1110

*a. 12 + 6 = 18
b. 6 + 3 + 4 = 13
c. 12 + 6 + 3 + 4 = 25

John's dad drove 125 miles on Tuesday, 130 miles on Wednesday and 150 miles on Thursday. How many more miles did he drive on Thursday than he drove on Tuesday? 1111

a. 125 + 130 - 150 = 105
*b. 150 - 125 = 25
c. 150 - 130 = 20

Kathy went shopping and bought 2 skirts for 10 dollars, a pair of shoes for 15 dollars, 2 dozen eggs for 1 dollar 30 cents and a dozen oranges for 65 cents. How much did she spend on clothing? 1112

a. $1.30 + 65 = $1.95
b. $25.00 + $1.95 = $26.95
*c. $10.00 + $15.00 = $25.00

Cindy went to the store and bought 2 dozen eggs at 60 cents a dozen, 3 lbs. of coffee at 79 cents a pound. How much was her bill? 1113

a. (2 + 60) + (3 + 79) = $1.44
*b. (2 x 60) + (3 x 79) = $3.57
c. 60 + 79 = $1.39

Source: Houghton Mifflin, pp. 42-43.

SIMPLIFICATION OF FRACTIONS

THE STUDENT WILL DEMONSTRATE KNOWLEDGE OF LOWEST TERM FRACTIONS BY SELECTING THOSE FRACTIONS IN LOWEST TERMS. 0101

Directions: If the fraction is in lowest terms cross out the L; if the fraction is not in lowest terms cross out the H.

L ~~H~~ 5/15 1114

~~L~~ H 2/3 1115

~~L~~ H 17/23 1116

~~L~~ H 4/7 1117

L ~~H~~ 14/7 1118

L ~~H~~ 21/39 1119

~~L~~ H 3/2 1120

~~L~~ H 1/16 1121

L ~~H~~ 7/49 1122

L ~~H~~ 2/2 1123

Source: Addison-Wesley, Bk. 5, p. 207.

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF REDUCING FRACTIONS TO LOWEST TERMS BY SELECTING THE GREATEST COMMON FACTOR OF THE NUMERATOR AND DENOMINATOR. 0102

Directions: Choose the greatest common factor of the numerator and the denominator for each fraction.

12/18 1124

a. 2
*b. 6
c. 4
d. 3

15/45 1125

*a. 15
b. 3
c. 5
d. 9

50/100 1126

a. 2
b. 5
c. 25
*d. 50

8/12 1127

a. 1
b. 2
*c. 4
d. 8

1/9 1128

a. 0
*b. 1
c. 3
d. 9

6/24 1129

a. 2
b. 3
c. 4
*d. 6

5/8 1130

*a. 1
b. 2
c. 5
d. 8

Source: Addison-Wesley, Bk. 5, p. 208.

THE STUDENT WILL DEMONSTRATE KNOWLEDGE OF FRACTIONS IN LOWEST TERMS BY SELECTING THE LOWEST TERM FRACTION FOR A GIVEN FRACTION. 0103

Directions: Select the lowest termed fraction for the fraction given.

6/21 1131

a. 3/7
b. 2/11
*c. 2/7
d. 6/21

16/40 1132

a. 4/10
b. 8/20
*c. 2/5
d. 16/40

42/60 1133

a. 21/30
*b. 7/10
c. 6/9
d. 42/60

28/45 1134

a. 4/9
b. 7/11
c. 14/22
*d. 28/45

42/72 1135

a. 21/36
*b. 7/12
c. 4/7
d. 42/72

90/120 1136

a. 9/12
*b. 3/4
c. 45/60
d. 90/120

36/54 1137

a. 6/9
b. 3/4
*c. 2/3
d. 36/54

280/105 1138

a. 3/2
b. 280/105
c. 70/25
*d. 8/3

Source: Addison-Wesley, Bk. 5, pp. 210, 212.

GIVEN A LIST OF FRACTIONS, THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF LOWEST TERM FRACTIONS BY SELECTING THE ONE WHICH IS IN LOWEST TERMS. 0153

Directions: Given a list of fractions, if a fraction is in lowest terms circle L; if it is not circle N.

[✓ L] N 4/9 1139
L [✓ N] 2/4 1140
L [✓ N] 4/6 1141
[✓ L] N 5/7 1142
L [✓ N] 6/12 1143
[✓ L] N 11/13 1144
L [✓ N] 12/18 1145
[✓ L] N 1/3 1146
L [✓ N] 16/28 1147
[✓ L] N 9/26 1148
[✓ L] N 17/21 1149
L [✓ N] 6/9 1150
[✓ L] N 2/3 1151
L [✓ N] 24/33 1152
[✓ L] N 15/16 1153

$\cancel{L}$ N 21/28 1154

L $\cancel{N}$ 16/18 1155

$\cancel{L}$ N 27/32 1156

THE STUDENT WILL APPLY HIS KNOWLEDGE OF SIMPLIFYING A FRACTION BEFORE MULTIPLYING BY CORRECTLY IDENTIFYING THE NUMBER BY WHICH THE NUMERATOR AND DENOMINATOR HAVE BEEN DIVIDED. 0243

Study the following fractional equation: $\overset{1}{\cancel{3}}/4 \times 5/\underset{2}{\cancel{6}} = N$. The numerator and denominator have been divided by 1157

a. 2
b. 6
*c. 3

$4/\underset{1}{\cancel{7}} \times \overset{1}{\cancel{7}}/9$. In this fraction the numerator and denominator have been divided by 1158

a. 1
*b. 7
c. 3

$3/\underset{1}{\cancel{4}} \times \overset{3}{\cancel{12}}/13$. In this fraction the numerator and denominator have been divided by 1159

a. 3
b. 1
*c. 4

$2/\underset{3}{\cancel{9}} \times \overset{1}{\cancel{3}}/7$. In this fraction the numerator and denominator have been divided by 1160

*a. 3
b. 1
c. 9

$\overset{4}{\cancel{8}}/11 \times 5/\underset{3}{\cancel{6}}$. In this fraction the numerator and denominator have been divided by 1161

a. 4
*b. 2
c. 3

$\overset{1}{\cancel{5}}/\underset{4}{\cancel{12}} \times \overset{1}{\cancel{3}}/\underset{1}{\cancel{5}}$. In this fraction the numerator and denominator have been divided by 1162

*a. 3 and 5
b. 4 and 1
c. 3 and 1

$\overset{1}{\cancel{5}}/\underset{3}{\cancel{9}} \times \overset{1}{\cancel{3}}/\underset{2}{\cancel{10}}$. In this fraction the numerator and denominator have been divided by 1163

a. 3 and 2
b. 5 and 2
*c. 5 and 3

$3/\underset{2}{\cancel{4}} \times \overset{3}{\cancel{6}}/7$. In this fraction the numerator and denominator have been divided by 1164

a. 6
*b. 2
c. 4

$\overset{2}{\cancel{6}}/11 \times 5/\underset{3}{\cancel{9}}$. In this fraction the numerator and denominator have been divided by 1165

*a. 3
b. 2
c. 6

$7/\underset{4}{\cancel{8}} \times \overset{5}{\cancel{10}}/15$. In this fraction, the numerator and denominator have been divided by 1166

a. 4
b. 5
*c. 2

Source: Merrill, Discovering Math 5, p. 312

THE STUDENT WILL APPLY HIS KNOWLEDGE OF SIMPLIFYING A FRACTION BEFORE MULTIPLYING BY CORRECTLY IDENTIFYING THE PRODUCT OF TWO SIMPLIFIED FRACTIONS. 0244

Study the simplification of the following fraction. Circle the correct product. 1167

$$\overset{1}{\cancel{2}}/\underset{1}{\cancel{3}} \times \overset{1}{\cancel{3}}/\underset{2}{\cancel{4}} = N$$

*a. 1/2
b. 1/3
c. 2/4

Study the simplification of the following fraction. Circle the correct product. 1168

$$\overset{1}{\cancel{5}}/\underset{6}{\cancel{12}} \times \overset{5}{\cancel{10}}/\underset{3}{\cancel{15}} = N$$

a. 1/3
b. 15/18
*c. 5/18

Study the simplification of the following fraction. Circle the correct product. 1169

$$\overset{2}{\cancel{4}}/\underset{1}{\cancel{7}} \times \overset{3}{\cancel{21}}/\underset{13}{\cancel{26}} = N$$

*a. 6/13
b. 42/13
c. 3/13

Study the simplification of the following fraction. Circle the correct product. 1170

$$\overset{2}{\cancel{4}}/\underset{3}{\cancel{6}} \times \overset{2}{\cancel{6}}/\underset{5}{1\cancel{0}} = N$$

a. 2/15
b. 4/8
*c. 4/15

Study the simplification of the following fraction. Circle the correct product. 1171

$$2/\underset{1}{\cancel{3}} \times \overset{4}{12} = N$$

a. 12/1
*b. 8
c. 2/1

Study the simplification of the following fraction. Circle the correct product. 1172

$$\overset{2}{\cancel{8}} \times 1/\underset{1}{\cancel{4}} = N$$

*a. 2
b. 2/4
c. 1/2

Study the simplification of the following fraction. Circle the correct product. 1173

$$\overset{1}{\cancel{3}}/\underset{1}{\cancel{3}} \times \overset{2}{\cancel{6}}/\underset{5}{1\cancel{5}} = N$$

a. 2/15
b. 6/5
*c. 2/5

Study the simplification of the following fraction. Circle the correct product. 1174

$$\overset{3}{\cancel{6}}/\underset{1}{\cancel{7}} \times \overset{1}{\cancel{7}}/\underset{5}{\cancel{10}} = N$$

*a. 3/5
b. 3/50
c. 7/5

Study the simplification of the following fraction. Circle the correct product. 1175

$$\overset{1}{\cancel{2}}/\underset{1}{\cancel{3}} \times 5/\underset{4}{\cancel{8}} \times \overset{2}{\cancel{6}}/7 = N$$

a. 10/28
b. 5/28
*c. 5/14

Study the simplification of the following fraction. Circle the correct product. 1176

$$\overset{1}{\cancel{3}}/\underset{2}{\cancel{6}} \times \overset{1}{\cancel{2}}/\underset{1}{\cancel{7}} \times \overset{1}{\cancel{7}}/\underset{3}{\cancel{9}} = N$$

*a. 1/6
b. 1/5
c. 1/9

Source: Merrill. Discovering Math 5, p. 313.

GIVEN A GROUP OF UNLIKE DENOMINATORS THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF THE LEAST COMMON DENOMINATOR BY SELECTING IT FROM A LIST OF ALTERNATIVES. 0170

Directions: Choose the least common denominator for each group of denominators.

$\frac{n}{3}, \frac{n}{4}, \frac{n}{6}$ 1177

a. 10
b. 24
c. 18
*d. 12

$\frac{n}{5}, \frac{n}{2}, \frac{n}{4}$ 1178

a. 10
b. 8
*c. 20
d. 12

$\frac{n}{2}, \frac{n}{4}, \frac{n}{6}$ 1179

a. 48
*b. 12
c. 10
d. 24

$\frac{n}{5}, \frac{n}{2}, \frac{n}{7}$ 1180

a. 14
b. 35
*c. 70
d. 140

$\frac{n}{18}, \frac{n}{12}, \frac{n}{9}$ 1181

a. 24
b. 18
c. 72
*d. 36

$\frac{n}{3}, \frac{n}{6}, \frac{n}{15}$ 1183

a. 20
b. 45
c. 60
*d. 30

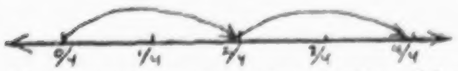
$\frac{n}{7}, \frac{n}{9}, \frac{n}{42}$ 1184

a. 378
*b. 126
c. 294
d. 2,646

ADDITION OF FRACTIONS

THE STUDENT KNOWS THAT CERTAIN FRACTIONS ADDED TOGETHER FORM A WHOLE BY INDICATING WHICH SETS OF FRACTIONS FORM A WHOLE. 0068

1185



the equation for the number line would be

a. $\frac{1}{4} + \frac{1}{4} = \frac{2}{4}$
b. $\frac{1}{2} + \frac{2}{4} = \frac{2}{6}$
*c. $\frac{2}{4} + \frac{2}{4} = 1$

If $\frac{3}{4} + \frac{1}{4} = \frac{4}{4} \times a$, then a is 1186

*a. 1
b. 4
c. 8
d. 0

If $\frac{2}{3} + b = \frac{3}{3} = c$, then b and c are 1187

*a. $b = \frac{1}{3}$ $c = 1$
b. $b = \frac{2}{3}$ $c = 1$
c. $b = \frac{3}{3}$ $c = 1$

The fraction that names a whole is 1188

a. $\frac{1}{2}$
b. $\frac{3}{2}$
c. $\frac{4}{3}$
*d. $\frac{3}{3}$

THE STUDENT WILL APPLY HIS KNOWLEDGE OF COMMON DENOMINATORS BY ADDING FRACTIONS WITH UNLIKE DENOMINATORS. 0159

Directions: Find the sums of the following addition problems.

1/2 + 2/6 = 1189

a. 3/8
b. 3/12
*c. 5/6
d. 3/6

2/3 + 1/4 = 1190

a. 3/12
*b. 11/12
c. 3/4
d. 2/4

2/5 + 2/4 = 1191

a. 4/10
b. 4/20
c. 4/9
*d. 18/20

4/7 + 3/4 = 1192

*a. 37/28
b. 12/28
c. 7/11
d. 7/28

7/18 + 2/9 = 1193

a. 14/162
b. 9/36
c. 14/36
*d. 11/18

4/8 + 5/24 = 1194

a. 20/24
b. 9/24
*c. 17/24
d. 32/24

THE STUDENT WILL APPLY HIS KNOWLEDGE OF THE ADDITION AND SUBTRACTION OF MIXED NUMERALS BY COMPUTING GIVEN EQUATIONS WHICH USE THESE PROCESSES. 0174

Directions: Compute the following equations and select the answer from the given list.

3 4/9 + 1 1/6 + 3 2/3 = 1195

a. 7 13/18
b. 7 17/18
*c. 8 5/18
d. 8 3/18

15 1/4 - 8 2/3 = 1196

a. 7 7/12
b. 7 1/12
c. 6 5/12
*d. 6 7/12

11 1/3 - 8 3/4 = 1197

*a. 2 7/12
b. 3 2/12
c. 2 5/12
d. 3 1/12

5 2/5 + 4 1/3 + 3 5/6 = 1198

*a. 13 17/30
b. 12 8/30
c. 12 29/30
d. 13 16/30

6 5/7 - 1 2/3 = 1199

a. 5 3/7
*b. 5 1/7
c. 4 1/7
d. 4 3/7

2 3/8 + 4 1/2 + 5 2/3 = 1200

a. 11 6/24
b. 12 11/24
c. 11 11/24
*d. 12 13/24

8 4/5 + 2 1/4 + 5 1/6 = 1201

a. 15 6/60
*b. 16 13/60
c. 15 6/60
d. 16 13/30

11 7/15 - 2 9/10 1202

a. 9 7/30
b. 8 7/30
*c. 8 17/30
d. 9 17/30

24 2/3 - 4 5/6 = 1203

*a. 19 5/6
b. 19 1/6
c. 20 5/6
d. 20 1/6

9 2/11 + 2 1/2 + 5 3/4 = 1204

a. 16 17/44
b. 16 19/44
c. 17 17/44
*d. 17 19/44

ADDITION AND SUBTRACTION OF FRACTIONS

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF FRACTIONS BY ADDING OR SUBTRACTING FRACTIONS WITH COMMON DENOMINATORS. 0074

Solve 1205

$$\begin{array}{r} \frac{5}{8} \\ +\ \frac{2}{8} \\ \hline \end{array}$$

a. $\frac{3}{8}$

b. $\frac{2}{8}$

c. $\frac{5}{8}$

*d. $\frac{7}{8}$

Directions: Match the equation in Column II with the correct fraction in Column I.

Column I	Column II	
_e_ 1 4/15	a. 2/15 + 9/15 = n	1206
	b. 5/15 - 2/15 = n	
_a_ 11/15	c. 14/15 - 6/15 = n	1207
	d. 3/15 + 10/15 = n	
_d_ 13/15	e. 9/15 + 10/15 = n	1208
_b_ 3/15		1209

Directions: Choose the correct fraction in Column II to solve the equation in Column I.

_b_ 1 - 3/8 = n	a. 1 7/8	1210
	b. 5/8	
_c_ 1 2/6 - 2/6 = n	c. 1	1211
	d. 1 2/6	
_e_ 5/6 + 2/6 = n	e. 1 1/6	1212
	f. 8/8	
_a_ 6/8 + 1 1/8 = n		1213

1 5/6
+3 2/6 1214

a. 4 5/6
b. 4 6/6
*c. 5 1/6
d. 5 7/6

Subtract

3 6/11
-2 1/11 1215

a. 5 7/11
b. 1 7/11
c. 5 5/11
*d. 1 5/11

Add

16 2/3
+ 5 1/3 1216

a. 21 3/6
b. 21 1/3
c. 22 3/3
*d. 22

Subtract

43 1/7
-40 6/7 1217

*a. 2 2/7
b. 3 2/7
c. 3 7/7
d. 43 7/7
e. 44

$(3/5 + 4/5) - 2/5 = n$ 1218

- a. 9/5
- b. 4/5
- *c. 1
- d. 1 4/5

$3/6 + 4/6 + 1/6 = n$ 1219

- a. 7/6
- b. 1 1/6
- c. 1 2/3
- *d. 1 1/3

Directions: An improper fraction in Column II is to be paired with its simplest form in Column I.

Column I	Column II	
__c__ 5 1/4	a. 16/5	1220
	b. 23/8	
__e__ 5 1/2	c. 42/8	1221
	d. 18/4	
__a__ 3 1/5	e. 33/6	1222
	f. 15/2	
__b__ 2 5/8		1223

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF FRACTIONS BY ADDING OR SUBTRACTING FRACTIONS WITH UNLIKE DENOMINATORS AND PUTTING THE ANSWERS INTO THE SIMPLEST FORM. 0075

In order to add or subtract fractions the _________ must be ____________________. 1224

- a. numerator, same
- b. denominator, equivalent
- c. numerator, equivalent
- *d. denominator, same

Directions: The fractions in Column I are the solutions for the equations in Column II. Select the correct letter and place it in front of the number of the solution.

__b__ 9 1/2 1225

__a__ 6 23/24 1226

__e__ 4 3/8 1227

__c__ 7 2/3 1228

a. 3 1/3 + 3 5/8
b. 13 5/6 - 5 1/3
c. 11 1/2 - 3 5/6
d. 6 7/8 - 3 1/2
e. 2 1/4 + 2 1/8

Solve

2/3 1229
1/6
3/8

a. 6/24
b. 6/17
*c. 1 5/24
d. 1 6/24

Solve the equation

2/3 + 1/6 + 3/10 = 1230

a. 6/19
b. 6/15
c. 1 6/15
*d. 1 2/15

2 1/2 1231
3 3/4
4 1/8

a. 9 5/8
b. 9 10/8
c. 10 11/8
*d. 10 3/8

THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF THE ADDITION AND SUBTRACTION OF FRACTIONS BY SOLVING EQUATIONS. 0114

Directions: Select the correct response.

2/3 + 3/3 = n, n = 1232

a. 5/6
b. 6/9
*c. 5/3
d. 6/3

7/8 + 2/8 = n, n = 1233

a. 14/8
*b. 9/8
c. 9/16
d. 5/8

7/4 - 2/4 = n, n = 1234

a. 5/0
b. 9/4
c. 5/8
*d. 5/4

9/10 + 1/10 = n, n = 1235

*a. 10/10
b. 10/20
c. 9/10
d. 9/20

7/16 + 11/16 = n, n = 1236

*a. 18/16
b. 18/32
c. 4/16
d. 4/32

8/4 - 3/4 = n, n = 1237

a. 11/4
*b. 5/4
c. 5/8
d. 5/0

18/2 - 1/2 = n, n = 1238

a. 19/4
b. 17/4
c. 17/0
*d. 17/2

7 + 3/8 = n, n = 1239

a. 10/8
b. 10/15
c. 7 10/8
*d. 7 3/8

4 2/3 - 1/3 = n, n = 1240

a. 5/3
b. 4 1/0
*c. 4 1/3
d. 1/3

5/5 + 1/5 = n, n = 1241

a. 6/10
*b. 6/5
c. 5/5
d. 6/25

Source: Addison-Wesley, Bk. 5,, pp. 240-241.

THE STUDENT WILL DEMONSTRATE HIS ABILITY TO ADD AND SUBTRACT FRACTIONS BY ANALYZING A VARIETY OF GIVEN PROBLEMS WHICH CONTAIN ERRORS TO FIND THE STEP AT WHICH THE INITIAL ERROR WAS MADE. 0171

Directions: Each of the problems given below is incorrect. Analyze the problem to find the step at which the error first occurs.

1242

a. Step 1
*b. Step 2
c. Step 3
d. Step 4

3/4 = 9/12
+1/3 = 5/12
14/12 =
1 2/12

1243

*a. Step 1
b. Step 2
c. Step 3
d. Step 4

4/5 = 6/10
1/10 = +2/10
8/10 =
4/5

1244

a. Step 1
b. Step 2
c. Step 3
*d. Step 4

4/9 = 8/18
+2/6 = +6/18
14/18 =
7/8

1245

a. Step 1
b. Step 2
*c. Step 3
d. Step 4

4/11 = 12/33
+2/3 = +22/33
24/33 =
8/11

a. Step 1
*b. Step 2
c. Step 3
d. Step 4

$$\begin{array}{r} 5/9 = 20/36 \\ \underline{+3/4 = +9/36} \\ 29/36 = \\ 29/36 \end{array}$$

1246

a. Step 1
b. Step 2
c. Step 3
*d. Step 4

$$\begin{array}{r} 4/5 = 12/15 \\ \underline{-2/3 = 10/15} \\ 2/15 = \\ 1/5 \end{array}$$

1247

a. Step 1
b. Step 2
*c. Step 3
d. Step 4

$$\begin{array}{r} 3/4 = 21/28 \\ \underline{-3/7 = -12/28} \\ 10/28 = \\ 5/14 \end{array}$$

1248

*a. Step 1
b. Step 2
c. Step 3
d. Step 4

$$\begin{array}{r} 7/10 = 20/30 \\ \underline{-4/15 = 8/30} \\ 12/20 = \\ 3/5 \end{array}$$

1249

a. Step 1
*b. Step 2
c. Step 3
d. Step 4

$$\begin{array}{r} 8/9 = 16/18 \\ \underline{-3/6 = 6/18} \\ 10/18 = \\ 5/9 \end{array}$$

1250

a. Step 1
b. Step 2
c. Step 3
*d. Step 4

$$\begin{array}{r} 14/16 = 42/48 \\ \underline{-9/12 = -36/48} \\ 6/48 = \\ 2/19 \end{array}$$

1251

ADDITION AND SUBTRACTION OF DECIMALS

THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF THE ADDITION OF DECIMALS BY SELECTING THE CORRECT ANSWER TO GIVEN ADDITION PROBLEMS. 0126

Directions: Choose the correct total.

.6 + .5 = 1252

a. .11
*b. 1.1
c. 11

.7 + .7 = 1253

*a. 1.4
b. 14
c. .14

.2 + .8 = 1254

a. .10
*b. 1.0
c. .010

3.7 + .8 1255

a. 45
b. .45
*c. 4.5

7.6 + 8.9 = 1256

a. 1.65
b. .165
*c. 16.5

.632 + .819 = 1257

*a. 1.451
b. 14.51
c. 145.1

7.28 + 6.95 = 1258

*a. 14.23
b. 1.423
c. 142.3

98.4 + 48.9 1259

a. 14.73
*b. 147.3
c. 1.473

4.58 + 7.6 = 1260

a. 5.34
*b. 12.18
c. 11.64

Source: Addison-Wesley Bk. 5, p. 275, 276.

THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF SUBTRACTION OF DECIMALS BY SELECTING THE CORRECT ANSWER TO GIVEN SUBTRACTION PROBLEMS. 0127

Directions: Solve the problems and select the correct answer.

6.4 - 2.8 = 1261

a. 36
*b. 3.6
c. .36

2.3 - .9 = 1262

a. .14
b. 14.
*c. 1.4

.92 - .65 = 1263

a. 2.7
*b. .27
c. 27

.76 - .09 = 1264

*a. .67
b. 6.7
c. .067

6.82 - .63 = 1265

a. .52
*b. 6.19
c. .619

6.95 - 2.9 = 1266

*a. 4.05
b. 6.66
c. 4.5

.832 - .57 1267

a. .775
*b. .262
c. 2.62

59 - .58 1268

a. .01
b. 58.58
*c. 58.42

Source: Addison-Wesley, Bk. 5, p. 277.

MULTIPLICATION AND DIVISION

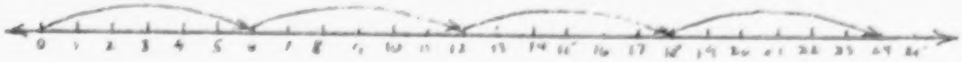
WHOLE NUMBER MULTIPLICATION

THE STUDENT WILL APPLY HIS KNOWLEDGE THAT MULTIPLICATION IS A SHORT CUT TO ADDITION WHEN ALL THE ADDENDS ARE ALIKE BY REPHRASING ADDITION PROBLEMS AS MULTIPLICATION EQUATIONS. 0191

Which number sentence correctly expresses this addition - 4 + 4 + 4 + 4 = 16? 1269

a. 8 x 2 = 16
*b. 4 x 4 = 16
c. 16 x 1 = 16

Examine the addition problem shown on the number line below. Which number sentence expresses the same problem? 1270



*a. 4 x 6 = 24
b. 24 x 1 = 24
c. 6 x 4 = 24

Which number sentence below correctly rephrases the addition problem - 8 + 8 + 8 = 24? 1271

a. 8 x 3 = 24
b. (8 x 2) + (8 x 1) = 24
*c. 3 x 8 = 24

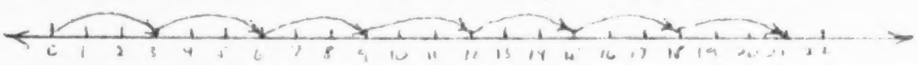
Which number sentence below correctly rephrases the addition problem 5 + 5 + 5 + 5 + 5 + 5 = 30? 1272

*a. 6 x 5 = 30
b. 5 x 6 = 30
c. (3 x 5) + (3 x 5) = 30

Which number sentence below correctly rephrases the addition problem 3 + 3 + 3 = 9? 1273

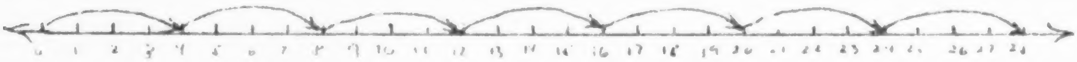
a. 3 x 3 x 1 = 9
b. (3 x 2) + (3 x 1) = 9
*c. 3 x 3 = 9

Which equation below is represented by the number line? 1274



*a. 7 x 3 = 21
b. 3 x 7 = 21
c. 21 x 1 = 21

Which equation below is represented by the number line? 1275



a. 4 x 7 = 28
b. 28 x 1 = 28
*c. 7 x 4 = 28

Which number sentence correctly rephrases the following addition problem: 7 + 7 + 7 + 7 + 7 = 35 1276

a. 35 x 1 = 35
*b. 5 x 7 = 35
c. 7 x 5 = 35

Which number sentence correctly rephrases the following addition problem? 50 + 50 + 50 = 150 1277

*a. 3 x 50 = 150
b. 50 x 3 = 150
c. (50 x 2) + (50 x 1) = 150

Which number sentence correctly rephrases the following addition problem? 9 + 9 + 9 + 9 + 9 + 9 = 54 127

a. 9 x 6 = 54
*b. 6 x 9 = 54
c. (9 x 3) + (9 x 3) = 54

Source: Harcourt, Brace, Elementary Math 5, pp. 46, 61 (1).

THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF MULTIPLICATION AS REPEATED ADDITION BY RENAMING ONE FACTOR OF A MULTIPLICATION PROBLEM AS TWO ADDENDS. 019

Which equation below correctly renames the "9" of the number sentence 7 x 9 = 63? 127

a. (7 x 9) + (7 x 1) = N
*b. (7 x 5) + (7 x 4) = N
c. (7 x 4) + (1 x 5) = N

Which equation does NOT correctly rename the "14" in the number sentence 7 x 14 = N? 128

a. (7 x 10) + (7 x 4) = N
b. (7 x 7) + (7 x 7) = N
*c. (7 x 14) + (7 x 1) = N

Underline the equation which shows the correct renaming of the factor "13". 128

a. (4 x 13) + (4 x 1) = N
*b. (4 x 10) + (4 x 3) = N
c. (4 x 13) + (4 x 0) = N

Which equation correctly renames the "12" in the equation 12 x 9 = N? 1282

*a. (8 x 9) + (4 x 9) = N
b. (8 x 9) + (1 x 9) = N
c. (12 x 9) + (1 x 9) = N

Which equation correctly renames the "9" in the equation 12 x 9 = N? 1283

a. (6 x 9) + (6 x 1) = N
b. (12 x 9) + (12 x 1) = N
*c. (12 x 5) + (12 x 4) = N

Which equation correctly renames the "16" in the equation 5 x 16 = N? 1284

*a. (10 x 5) + (6 x 5) = N
b. (16 x 5) + (16 x 5) = N
c. (16 x 5) + (1 x 5) = N

Which equation does NOT correctly rename the "15" in the equation 7 x 15 = N? 1285

*a. (7 x 9) + (7 x 5) = N
b. (7 x 10) + (7 x 5) = N
c. (7 x 7) + (7 x 8) = N

Which equation correctly renames the "19" in the equation 11 x 19 = N? 1286

a. (11 x 19) + (11 x 1) = N
b. (11 x 8) + (11 x 9) = N
*c. (11 x 10) + (11 x 9) = N

Which equation correctly renames the "17" in the equation 5 x 17 = N? 1287

a. (5 x 17) + (5 x 1) = N
*b. (5 x 10) + (5 x 7) = N
c. (3 x 17) + (2 x 17) = N

Which equation correctly renames the "5" in the equation 9 x 5 = N? 1288

a. (9 x 5) + (9 x 1) = N
b. (5 x 5) + (4 x 5) = N
*c. (9 x 2) + (9 x 3) = N

Source: Merrill, Discovering Math 5, pp. 55 and 56, (2-6).

THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF THE MULTIPLICATION - ADDITION PRINCIPLE BY "BREAKING APART" ONE FACTOR OF AN EQUATION. 0193

Which equation correctly illustrates the multiplication-addition principle? 1289

a. 6 x 11 = (6 x 11) + (6 x 1)
*b. 6 x 11 = (6 x 10) + (6 x 1)
c. 6 x 11 = (3 x 10) + (3 x 1)

Underline the equation below which correctly "breaks apart" one factor of the equation. 1290

a. 8 x 17 = (8 x 7) + (8 x 1)
b. 8 x 17 = (4 x 10) + (4 x 7)
*c. 8 x 17 = (8 x 10) + (8 x 7)

Which equation does NOT illustrate the multiplication-addition principle? 1291

*a. 9 x 7 = 7 x 9
b. 9 x 7 = (6 x 7) + (3 x 7)
c. 6 x 35 = (6 x 30) + (6 x 5)

Which equation illustrates the multiplication-addition principle? 1292

*a. 6 x 35 = (6 x 30) + (6 x 5)
b. 6 x 35 = 35 x 6
c. 6 x 35 = 3 x 2 x 35

Which equation correctly "breaks apart" one factor of the equation? 1293

*a. 7 x 7 = (5 x 7) + (2 x 7)
b. 7 x 7 = (4 x 7) + (4 x 7)
c. 7 x 7 = (5 x 2) + (2 x 5)

Which equation correctly "breaks apart" one factor of the equation? 1294

a. 4 x 16 = (4 x 16) + (4 x 1)
*b. 4 x 16 = (4 x 10) + (4 x 6)
c. 4 x 16 = (4 x 16) + (4 x 0)

Which equation correctly "breaks apart" one factor of the equation? 1295

a. 7 x 23 = (7 x 23) + (7 x 1)
b. 7 x 23 = (7 x 19) + (7 x 5)
*c. 7 x 23 = (7 x 20) + (7 x 3)

Which equation correctly "breaks apart" one factor of the equation? 1296

*a. 6 x 9 = (5 x 9) + (1 x 9)
b. 6 x 9 = (6 x 9) + (1 x 9)
c. 6 x 9 = (3 x 9) + (4 x 9)

Which equation "breaks apart" two factors of the equation? 1297

a. 5 x 12 = (5 x 10) + (5 x 2)
b. 5 x 12 = (3 x 12) + (2 x 12)
*c. 5 x 12 = (3 x 10) + (2 x 2)

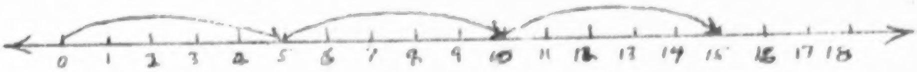
Which factor has been "broken apart" in the following equation? 1298
8 x 17 = (8 x 10) + (8 x 7)

*a. 17
b. 8
c. 10

Source: Addison-Wesley Elementary School Math 5, p. 27.

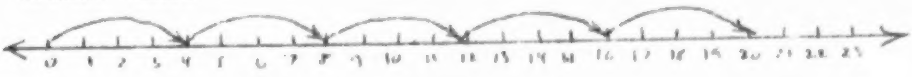
THE STUDENT WILL DEMONSTRATE HIS COMPREHENSION THAT MULTIPLICATION IS REPEATED ADDITION BY CORRECTLY IDENTIFYING NUMBER SENTENCES SHOWN ON A NUMBER LINE. 019

Which number sentence below is shown on the number line? 129


0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18

a. 5 x 3 = 15
b. 15 x 1 = 15
*c. 3 x 5 = 15

Circle the number sentence below which is shown on the following number line. 130


0
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4
5
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7
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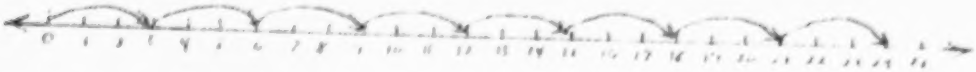
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23

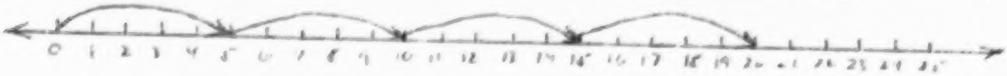
*a. 5 x 4 = 20
b. 4 x 5 = 20
c. 20 x 1 = 20

Circle the multiplication sentence shown on the following number line. 1301



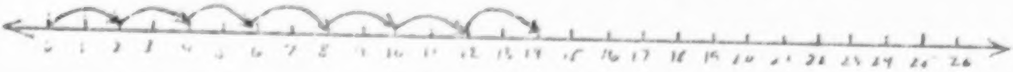
a. 3 x 8 = 24
*b. 8 x 3 = 24
c. 24 x 1 = 24

Which number sentence below is shown on the number line? 1302



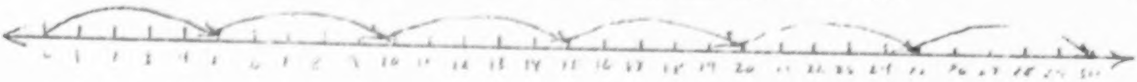
a. 5 x 4 = 20
*b. 4 x 5 = 20
c. 1 x 20 = 20

Which number sentence below is shown on the number line? 1303



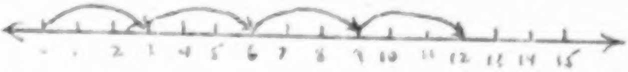
a. 2 x 7 = 14
b. 14 x 1 = 14
*c. 7 x 2 = 14

Which number sentence below is shown on the number line? 1304



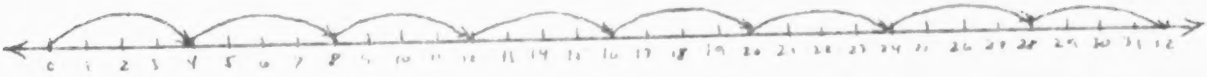
*a. 6 x 5 = 30
b. 1 x 30 = 30
c. 5 x 6 = 30

Which number sentence below is shown on the number line? 1305



*a. 4 x 3 = 12
b. 3 x 4 = 12
c. 12 x 1 = 12

Which number sentence below is shown on the number line? 130


0
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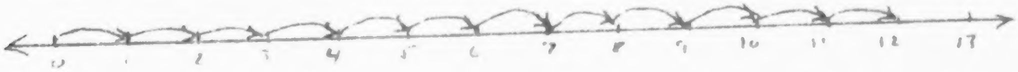
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

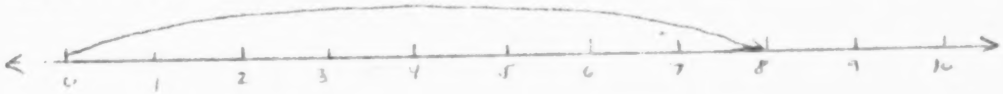
a. 1 x 32 = 32
b. 4 x 8 = 32
*c. 8 x 4 = 32

Which number sentence is shown correctly on the number line? 130


0
1
2
3
4
5
6
7
8
9
10
11
12
13

a. 1 x 12 = 12
*b. 12 x 1 = 12
c. 1 x 6 x 2 = 12

Which number sentence below is shown on the number line? 130


0
1
2
3
4
5
6
7
8
9
10

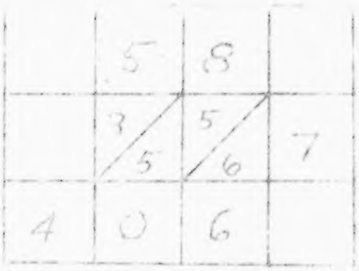
a. 8 x 1 = 8
b. 4 x 2 x 1 = 8
*c. 1 x 8 = 8

Source: Harcourt, Brace, Elementary Math 5, p. 48.
Merrill, Discovering Math 5, p. 30, (1-3).

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF A TABLE TO INDICATE THE FUNCTION INVOLVED IN COMPUTING A PRODUCT BY NAPIER RODS. 005

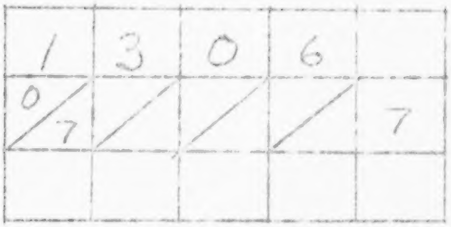
This is an example of multiplication invented by Napier, called the Lattice Method. 130

58 × 7 =



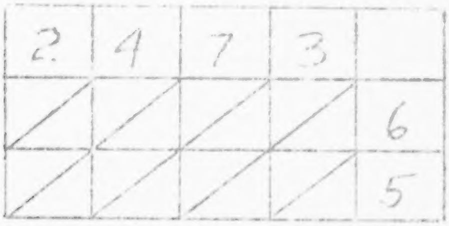
5
8
3
5
5
6
7
4
0
6

Given this lattice, the answer will be



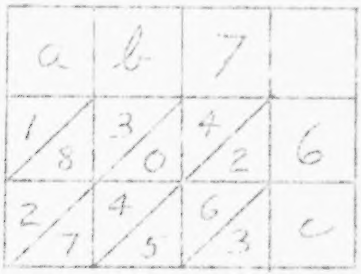
a. 72142
*b. 9142
c. 7304
d. 9106

Compute on this lattice. The product is 1310



a. 166645
*b. 160745
c. 155635
d. 156745

Complete the lattice and a, b, c. The solution will be 1311



a
b
7
1
8
3
0
4
2
6
2
7
4
5
6
3
c

*a. a = 3, b = 5, c = 9, 24,633
b. a = 4, b = 6, c = 7, 23,123
c. a = 2, b = 5, c = 8, 20,533
d. a = 3, b = 5, c = 9, 23,533

THE STUDENT CAN APPLY THE CONCEPTS OF MULTIPLICATION TO INDICATE THE PROPERTIES INVOLVED IN GIVEN OPERATIONS. 0046

The operations of multiplication can be described. Which one of these does not describe multiplication? 1312

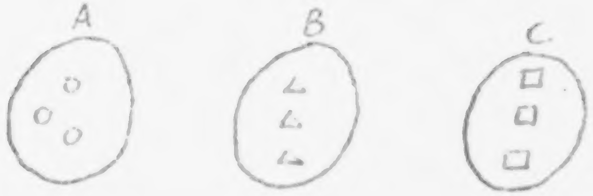
- a. operation of factors gives a product
- b. joining of equivalent sets
- c. addition of equal addends
- d. cross product of two sets
- *e. joining of equal sets

Which one of the following is incorrect for multiplication? 1313

Multiplication:
- a. is commutative
- *b. has zero as the identity element
- c. is associative
- d. is distributive
- e. has one as the identity element

Multiplication has an inverse (opposite) operation. It is to _____ 1314

- a. subtract
- b. add
- *c. divide
- d. multiply



The joining of these sets is not described by: 1315

- a. 3×3
- b. $3 + 3 + 3$
- c. $n(A) + n(B) + n(C)$
- d. $A \cup B \cup C$
- *e. $(A + B) \times C$

Four sets of six and three sets of six can be expressed as: 1316

*a. (4 + 3) x 6
b. (4 + 6) x (3 + 6)
c. (3 x 6) x (4 x 6)
d. 6 + 6 + 3 + 4

Five sets of three and 6 sets of three does NOT equal: 1317

a. 33
b. (5 + 6) x 3
c. (3 x 6) + (5 x 3)
*d. (5 + 3) x (6 + 3)

THE STUDENT DEMONSTRATES KNOWLEDGE OF MULTIPLICATION BY INDICATING THAT IT IS THE MATCHING OF ONE TO MANY OR USING THE CONCEPT OF RATE. 0047

If there are always 16 strawberries per pint, how many strawberries will there be in 6 pints? 1318

a. 72
b. 86
*c. 96
d. 22

If there are 8 marbles per bag, 7 bags will have 1319

a. 40 marbles
b. 54 marbles
c. 63 marbles
*d. 56 marbles
e. 64 marbles

If there are 5 school days per week, in one nine week period there will be 1320

*a. 45 school days
b. 5 school days
c. 95 school days
d. 9 school days

Last week the grocery store charged 15¢ per pound potatoes. 4 lbs. would cost: 1321

a. $ .30
b. $ .45
*c. $ 60¢
d. $ 65¢

If there are 26 books per each library shelf, 4 shelves will hold how many books? 1322

*a. 104
b. 84
c. 90
d. 106

If plums cost 39¢ a pound, 3 pounds of plums cost 1323

a. 97¢
*b. $1.17
c. .72¢
d. $1.07

If there are 12 doughnuts per box, 6 boxes will contain how many doughnuts? 1324

*a. 72
b. 60
c. 68
d. 78

The team usually made 7 hits per game. In 9 games we could expect ________________. 1325

a. 16 hits
b. 57 hits
c. 61 hits
*d. 63 hits

THE STUDENT DEMONSTRATES KNOWLEDGE OF MULTIPLICATION BY MULTIPLYING A 1, 2, OR 3-PLACE FACTOR TIMES A 2, 3, 4 OR 5-PLACE FACTOR. 0048

6 sets of 52 are: 1326

*a. 312
b. 302
c. 32
d. 320

7 groups of 346 are: 1327

a. 2202
*b. 2422
c. 2382
d. 2412

9 times 309 is: 1328

a. 2763
b. 2090
c. 2789
*d. 2781

(400 + 60 + 3) multiplied by 3 is: 1329

*a. 1389
b. 1209
c. 1299
d. 1399

6 · 6 · 6 is NOT equal to: 1330

*a. 3 x 6
b. 6^2 x 6
c. 36 x 6
d. 216

$(5)(6 + 4) =$ 1331

a. 44
b. 34
*c. 50
d. 60

If $\square \div 16 = 4$, then $\square =$ 1332

a. 4
b. 60
*c. 64
d. 20

If $\square = 35 \cdot 35$, then $\square =$ 1333

a. 70
*b. 1325
c. 290
d. 425

If $17 \cdot 52 = \square$, then $\square =$ 1334

a. 119
*b. 884
c. 69
d. 894

If $n = (3 \times 5)(100)$, then $n =$ 1335

*a. 1500
b. 800
c. 115
d. 15,000

If $(8 \times 16)(4 \times 5) = n$, then $n =$ 1336

a. 44
b. 1880
c. 148
*d. 2560

Multiply

The product of 747 is 1337
x 8

*a. 5976
b. 6006
c. 5866
d. 5826

392 equals 1338
x 6

a. 2352
b. 2242
c. 1842
*d. 2346

564
x 7 equals: 1339

a. 3528
b. 3848
c. 4008
*d. 3948

6091
x 9 is: 1340

a. 54729
b. 54809
*c. 54819
d. 54189

4358
x 5 is: 1341

a. 20650
*b. 21790
c. 21580
d. 20690

Solve 8567
x 9 1342

*a. 77103
b. 75894
c. 76963
d. 77032

Solve 80
x36 1343

a. 116
b. 720
*c. 2880
d. 2406

Multiplication

70
x28 equals 1344

*a. 1960
b. 98
c. 700
d. 1480

If 60 x 49 = ☐, then ☐ = 1345

*a. 2940
b. 264
c. 2840
d. 294

50
x77 equals 1346

a. 395
*b. 3850
c. 375
d. 3550

If 43 x 37 = □ , then □ = 1347

a. 1571
b. 430
c. 80
*d. 1591

If □ = 59 x 41, then □ = 1348

a. 2009
*b. 2419
c. 100
d. 619

If 60 x 28 = □ , then □ = 1349

*a. 1680
b. 88
c. 600
d. 1280

If □ = 24 x 37, then □ = 1350

a. 61
b. 292
*c. 888
d. 768

If 43 x 28 = □ , then □ = 1351

*a. 1204
b. 430
c. 1184
d. 61

If □ = 94 x 37, then □ is 1352

a. 940
b. 131
*c. 3478
d. 3358

If $53 \cdot 45 = \square$, then $\square$ is 1353

*a. 2385
b. 2275
c. 277
d. 2015

If $\square = 36 \cdot 42$, then $\square$ is 1354

a. 1508
b. 1212
c. 78
*d. 1512

If $(37)(14) = \square$, then $\square$ is 1355

*a. 518
b. 51
c. 185
d. 328

If $\square = (24)(62)$, then $\square$ is 1356

a. 372
*b. 1488
c. 128
d. 86

If $15(48) = \square$, then $\square$ is 1357

*a. 720
b. 288
c. 440
d. 700

If $\square = 25(46)$, then $\square$ is 1358

a. 950
b. 71
*c. 1150
d. 830

Multiplication

Solve: 957 1359
x 73

a. 67,761
*b. 69,861
c. 68,761
d. 66,661

826 1360
x 52 equals

a. 40052
b. 43952
c. 42052
*d. 42952

638 1361
x 49 equals

a. 30242
*b. 31262
c. 30152
d. 31162

Solve: 781 1362
x 64

*a. 49,984
b. 50,004
c. 49,064
d. 49,774

Solve: 382 1363
x 97

a. 72,954
b. 73,044
c. 72,944
*d. 73,054

Solve 853
x 68 1364

a. 57,904
*b. 58,004
c. 58,904
d. 57,004

Solve: 457
x 83 1365

a. 37,831
b. 37,911
*c. 37,931
d. 37,311

THE STUDENT CAN APPLY HIS ABILITY TO MULTIPLY BY 2 OR 3 PLACE NUMBERS TO SOLVE PROBLEMS EXPRESSED IN A LINEAR EQUATION. 0049

Directions: Solve for the unknown, in the following equations.

□ = 25 x 409 1366

a. 434
b. 10125
c. 2863
*d. 10225

304 x 65 = □ 1367

*a. 19760
b. 3344
c. 20760
d. 3244

$\square = 40 \times 349$ 1368

a. 12960
b. 12660
*c. 13960
d. 13660

$267 \times 80 = \square$ 1369

*a. 21360
b. 16860
c. 20260
d. 22160

$\square = 435 \times 90$ 1370

a. 40000
*b. 39150
c. 36850
d. 38050

$782 \times 50 = \square$ 1371

a. 40160
b. 35000
*c. 39100
d. 39000

$416 \times 314 = x$ 1372

a. 5824
b. 6072
c. 129524
*d. 130624

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x = 719 x 613 1373

*a. 440747
b. 429647
c. 439647
d. 430747

246 x $4.98 = n 1374

a. 122508
*b. $1225.08
c. $12.2508
d. $122508

n = $6.89 x 200 1375

a. $137800
b. $13,7800
c. 137800
*d. $1378.00

THE STUDENT CAN DEMONSTRATE KNOWLEDGE OF MULTIPLICATION BY MULTIPLYING WITH THREE PLACE NUMBERS. 0050

Solve 1376

634
x123

a. 76,682
b. 62,682
c. 72,782
*d. 77,982

Solve 1377

496
x214

*a. 106,144
b. 98,264
c. 104,044
d. 99,284

Solve 1378

$$\begin{array}{r} 823 \\ \underline{\times 613} \end{array}$$

a. 500,509
*b. 504,499
c. 503,869
d. 502,389

Solve 1379

$$\begin{array}{r} 417 \\ \underline{\times 223} \end{array}$$

a. 90,781
b. 83,451
c. 89,571
*d. 92,991

THE STUDENT DEMONSTRATES UNDERSTANDING OF MULTIPLICATION BY STATING WHEN TO MULTIPLY TO SOLVE LINEAR EQUATIONS. 0051

Directions: In the following equations, solve for the unknown. ($\square$)

$\square \div 45 = 726$ 1380

a. 16.1
*b. 32,670
c. 16,09
d. 31,600

$837 = \square \div 58$ 1381

a. 14.43
b. 14.5
*c. 48,546
d. 47,546

$\square \div 27 = 925$ 1382

*a. 24,975
b. 34.25
c. 24,765
d. 34.19

$628 = \square \div 39$ 1383

a. 16.2
b. 16.103
*c. 24,492
d. 24,472

$833 = \square \div 26$ 1384

*a. 21,658
b. 32,045
c. 20,878
d. 32.04

$\square \div 54 = 627$ 1385

a. 32,648
b. 11.61
c. 11.72
*d. 33,858

$781 = \square \div 563$ 1386

a. 1.38
*b. 439,704
c. 1.403
d. 438,704

$\square \div 329 = 468$ 1387

a. 143,972
b. 1.42
*c. 153,972
d. 1.319

$853 = \square \div 472$ 1388

a. 1.80
*b. 402,616
c. 1.79
d. 400,606

$\square \div 518 = 962$ 1389

a. 1.84
b. 2.08
c. 497,216
*d. 498,316

$\frac{\square}{20} = 830$ 1390

a. 41 1/2
b. 41.5
*c. 16600
d. 1660

$560 = \frac{\square}{30}$ 1391

a. 18 2.3
*b. 16800
c. 18.666
d. 1680

$\frac{\square}{480} = 50$ 1392

a. .104
b. 9.6
c. 2400
*d. 24000

$20 = \frac{\square}{720}$ 1393

- *a. 14400
- b. 36
- c. .027
- d. 1440

$\frac{\square}{33} = 660$ 1394

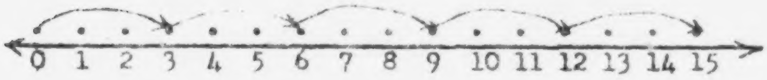
- a. 20
- *b. 21780
- c. 22
- d. 2078

THE STUDENT CAN DEMONSTRATE KNOWLEDGE OF EQUATIONS BY EXPRESSING THE FOUR BASIC EQUATIONS INVOLVING TWO ONE-DIGIT FACTORS AND THEIR PRODUCT. 0054

The factors 6 and 9 would not be expressed 1395

- a. $54 \div 9 = 6$
- b. $9 \times 6 = 54$
- *c. $6 \div 9 = 54$
- d. $6 \times 9 = 54$

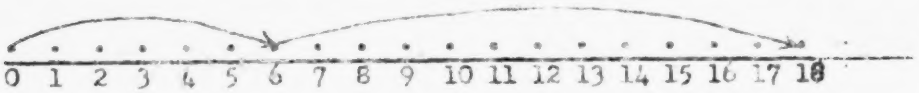
The following number line expresses the equation 1396



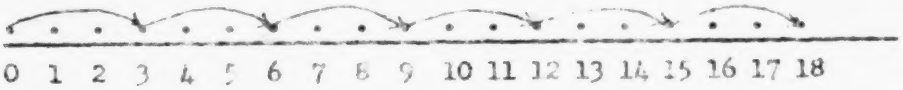
- a. $5 \times 5 = n$
- b. $15 \times 3 = n$
- *c. $15 \div 5 = n$
- d. $0 + 15 = n$

For the equation 18 ÷ 6 = n the number line would be 1397

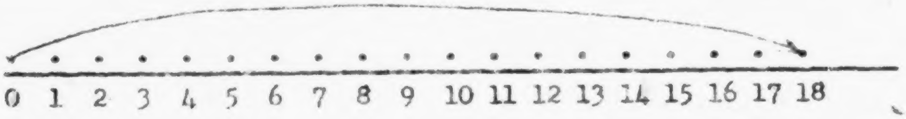
a.


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

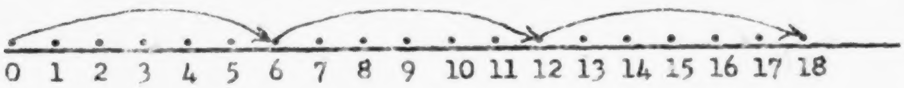
*b.


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

c.


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

d.


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

The family of facts for 7 and 8 would not include 1398

a. 7 x 8 = 56
b. 56 ÷ 7 = 8
c. 8 · 7 = 56
*d. 8 ÷ 56 = 7/

THE STUDENT WILL APPLY KNOWLEDGE OF MULTIPLYING BY MULTIPLES OF 10 BY SELECTING THE CORRECT ANSWER TO GIVEN STORY PROBLEMS. 0134

Directions: Solve the following story problems.

At birth, a gorilla weighed 6 lbs. He now weighs 100 times as much. How much does he weigh? 1399

a. 106
b. 60
c. 6100
*d. 600

A mother whale gave birth to a 25 foot baby that weighed 1,600 lbs. As an adult it weighs 30 times more than birth. How much does the adult whale weigh? 1400

a. 16,000
*b. 48,000
c. 4,800
d. 38,000

If a farmer plants 350 corn seeds in each row, and he has 3,000 rows. How many seeds did he plant? 1401

a. 950,000
b. 350,000
*c. 1,050,000
d. 3,350

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF THE BASIC MULTIPLICATION FACTS TO 81 BY RECALLING THE CORRECT PRODUCT FROM A GROUP OF POSSIBLE PRODUCTS. 0205

Circle the correct product for the fact: 6 x 3 = N 1402

a. 12
*b. 18
c. 24

Circle the correct product for the fact: 5 x 9 = N 1403

*a. 45
b. 54
c. 40

Circle the correct product for the fact: 7 x 8 = N 1404

a. 54
*b. 56
c. 40

Circle the correct product for the fact: 3 x 9 = N 1405

*a. 27
b. 24
c. 36

Circle the correct product for the fact: 8 x 4 = N 1406

a. 24
b. 12
*c. 32

Circle the correct product for the fact: 8 x 5 = N 1407

a. 45
b. 32
*c. 40

Circle the correct product for the fact: 6 x 7 = N 1408

*a. 42
b. 45
c. 49

Circle the correct product for the fact: 9 x 5 = N 1409

a. 40
b. 36
*c. 45

Circle the correct product for the fact: 8 x 7 = N 1410

*a. 56
b. 45
c. 54

Circle the correct product for the fact: 9 x 8 = N 1411

a. 81
*b. 72
c. 56

Circle the correct product for the fact: 6 x 8 = N 1412

a. 42
*c. 48
c. 54

Circle the correct product for the fact: 9 x 4 = N 1413

a. 42
b. 27
*c. 36

Circle the correct product for the fact: 9 x 9 = N 1414

*a. 81
b. 64
c. 72

Circle the correct product for the fact: 6 x 9 = N 1415

*a. 54
b. 56
c. 64

Circle the correct product for the fact: 8 x 8 = N 1416

a. 81
*b. 64
c. 56

Source: Addison-Wesley. Elementary School Math, 5. Pg. 316.

THE STUDENT WILL ANALYZE A MULTIPLICATION PROBLEM SHOWING THE PLACE VALUE OF THE 2-DIGIT FACTOR BY IDENTIFYING THE CORRECT RENAMING OF A FACTOR. 0207

In the multiplication problem below, what 2 factors gave you "120"? 1417

$$\begin{array}{r} 37 \\ \underline{\times 4} \\ 28 \\ \underline{120} \\ 148 \end{array}$$

a. 4 x 7
*b. 4 x 30
c. 4 x 3

In the multiplication problem below, what 2 factors gave you #35"? 1418

$$\begin{array}{r} 67 \\ \underline{\times 5} \\ 35 \\ \underline{300} \\ 335 \end{array}$$

*a. 5 x 7
b. 5 x 60
c. 5 x 6

In the multiplication problem below, what 2 factors gave you "24"? 1419

$$\begin{array}{r} 84 \\ \underline{\times 6} \\ 24 \\ \underline{480} \\ 504 \end{array}$$

a. 6 x 8
*b. 6 x 4
c. 6 x 80

In the multiplication problem below, what 2 factors gave you "450"? 1420

$$\begin{array}{r} 52 \\ \underline{x9} \\ 18 \\ \underline{450} \\ 468 \end{array}$$

*a. 9 x 50
b. 9 x 2
c. 9 x 5

In the multiplication problem below, what 2 factors gave you "20"? 1421

$$\begin{array}{r} 95 \\ \underline{x4} \\ 20 \\ \underline{360} \\ 380 \end{array}$$

a. 4 x 90
b. 4 x 9
*c. 4 x 5

In the multiplication problem below, what 2 factors gave you "490"? 1422

$$\begin{array}{r} 79 \\ \underline{x7} \\ 63 \\ \underline{490} \\ 553 \end{array}$$

a. 7 x 7
b. 7 x 9
*c. 7 x 70

In the multiplication problem below, what 2 factors gave you "320"? 1423

$$\begin{array}{r} 46 \\ \underline{x8} \\ 48 \\ \underline{320} \\ 368 \end{array}$$

a. 8 x 4
*b. 8 x 40
c. 8 x 6

In the multiplication problem below, what 2 factors gave you "24"? 1424

$$\begin{array}{r} 38 \\ \text{x}3 \\ \hline 24 \\ 90 \\ \hline 114 \end{array}$$

*a. 3 x 8
b. 3 x 30
c. 3 x 3

In the multiplication problem below, what 2 factors gave you "240"? 1425

$$\begin{array}{r} 38 \\ \text{x}8 \\ \hline 64 \\ 240 \\ \hline 304 \end{array}$$

*a. 8 x 30
b. 8 x 8
c. 8 x 3

In the multiplication problem below, what 2 factors gave you "180"? 1426

$$\begin{array}{r} 37 \\ \text{x}6 \\ \hline 42 \\ 180 \\ \hline 222 \end{array}$$

a. 6 x 3
b. 6 x 7
*c. 6 x 30

Source: Merrill, Discovering Math. 5., page 58.

THE STUDENT WILL APPLY HIS UNDERSTANDING OF THE PROCESS OF MULTIPLYING A TWO-DIGIT FACTOR BY A ONE-DIGIT FACTOR BY IDENTIFYING THE CORRECT PRODUCT FROM A LIST OF PRODUCTS. 0208

Directions: Work each of the following problems on scratch paper carefully. DO NOT guess. Then circle the correct product.

6 x 58 = N 1427

a. 3048
*b. 348
c. 308

3 x 17 = N 1428

*a. 51
b. 321
c. 41

7 x 27 = N 1429

*a. 189
b. 149
c. 1449

5 x 45 = N 1430

a. 205
*b. 225
c. 305

9 x 43 = N 1431

a. 367
b. 388
*c. 387

4 x 57 = N 1432

a. 208
*b. 228
c. 2028

7 x 68 = N 1433

a. 474
b. 426
*c. 476

8 x 96 = N 1434

*a. 768
b. 755
c. 728

4 x 95 = N 1435

*a. 380
b. 362
c. 360

9 x 49 = N 1436

a. 378
*b. 441
c. 421

Source: Harcourt, Brace, Elementary Math. 5., p. 56.

THE STUDENT WILL APPLY HIS UNDERSTANDING OF THE PROCESS OF MULTIPLYING A TWO OR THREE DIGIT FACTOR BY A ONE-DIGIT FACTOR BY IDENTIFYING THE CORRECT PRODUCT FROM A LIST OF PRODUCTS. 0209

Directions: Work each of the following problems on scratch paper carefully. DO NOT guess. Then circle the correct product.

5 x 84 = N 1437

a. 400
*b. 420
c. 4020

8 x 76 = N 1438

a. 644
b. 568
*c. 608

2 x 58 = N 1439

a. 161
*b. 116
c. 106

6 x 94 = N 1440

*a. 564
b. 582
c. 544

3 x 952 = N 1441

a. 2956
*b. 2856
c. 2756

5 x 795 = N 1442

a. 3925
b. 4002
*c. 3975

3 x 708 = N 1443

*a. 2124
b. 234
c. 2154

7 x 698 = N 1444

a. 4895
*b. 4886
c. 4286

9 x 319 = N 1445

a. 2881
b. 2808
*c. 2871

4 x 346 = N 1446

*a. 1384
b. 1308
c. 1264

Source: Elementary Math 5., Harchourt, Brace, p. 332.

THE STUDENT WILL ANALYZE EQUATIONS USING MULTIPLICATION BY TENS, HUNDREDS, AND THOUSANDS BY CORRECTLY IDENTIFYING COMPLETED EQUATIONS. 0210

Circle the number that stands for N in the equation: 1447
430 = N x 10

a. 430
*b. 43
c. 4

Circle the number that stands for N in the equation: 1448
3800 = N x 100

*a. 38
b. 380
c. 3800

Circle the number that stands for N in the equation: 1449
67,000 = N x 1000

*a. 67
b. 670
c. 6700

Circle the number that stands for N in the equation: 1450
67,000 = N x 100

a. 67
b. 6700
*c. 670

Circle the number that stands for N in the equation: 1451
7584 = (758 x N) + 4

a. 100
*b. 10
c. 1000

Circle the number that stands for N in the equation: 1452
42,647 = (4264 x N) + 7

*a. 10
b. 100
c. 1000

Circle the number that stands for N in the equation: 1453
67,000 = N x 10

a. 670
b. 67
*c. 6700

Circle the number that stands for N in the equation: 1454
7584 = (7 x N) + 584

a. 100
*b. 1000
c. 10

Circle the number that stands for N in the equation: 1455
42,647 = (42 x N) + 647

*a. 1000
b. 10
c. 100

Circle the number that stands for N in the equation: 1456
7584 = (75 x N) + 84

a. 10
*b. 100
c. 1000

Source: Elementary School Math, 5, Addison Wesley, p. 56.

THE STUDENT WILL STUDY A GIVEN MULTIPLICATION EQUATION AND FORMULATE A QUICKER WAY TO ARRIVE AT THE SAME ANSWER BY IDENTIFYING THE CORRECT METHOD FROM SEVERAL METHODS LISTED. 0211

Directions: Read each equation carefully. Then circle the number below which would be the missing number in the second equation.

400 x 3 x 100 = 120,000   400 x N = 120,000   1457

*a. 300
b. 30
c. 3

700 x 6 x 100 = 420,000   N x 600 = 420,000   1458

a. 60
b. 70
*c. 700

500 x 5 x 100 = 250,000   500 x N = 250,000   1459

*a. 500
b. 50
c. 100

600 x 8 x 100 = 480,000   600 x N = 480,000   1460

a. 80
b. 400
*c. 800

800 x 7 x 100 = 560,000   800 x N = 560,000   1461

a. 70
*b. 700
c. 7000

900 x 5 x 100 = 450,000   900 x N = 450,000   1462

a. 5
b. 50
*c. 500

6 x 10 x 3 x 100 = 24,000   N x 300 = 24,000   1463

*a. 60
b. 600
c. 30

9 x 100 x 6 x 10 = 48,000   N x 60 = 48,000   1464

a. 600
*b. 900
c. 90

3 x 10 x 8 x 100 = 24,000   30 x N = 24,000   1465

a. 80
*b. 800
c. 300

6 x 100 x 8 x 10 = 18,000   N x N = 18,000   1466

a. 60 x 800
*b. 600 x 80
c. 80 x 600

Source: Elementary School Math 5, Addison-Wesley, p. 59.

THE STUDENT WILL ANALYZE MULTIPLICATION ALGORISMS BY IDENTIFYING THE "ERROR" FROM A LIST OF ERRORS.   0212

Which partial product is incorrect in the following algorism?   1467

```
 367
 x 4
  28
 240
 120
```

*a. 120
b. 28
c. 240

Which partial product is incorrect in the following algorism? 1468

183
x 3
9
24
300

a. 300
b. 9
*c. 24

Which partial product is incorrect in the following algorism? 1469

839
x 7
63
210
560

a. 210
b. 63
*c. 560

Which partial product is incorrect in the following algorism? 1470

709
x 7
63
490

a. 63
*b. 490
c. neither

Which partial product is incorrect in the following algorism? 1471

576
x 8
48
56
4000

*a. 56
b. 48
c. 4000

Which partial product is incorrect in the following algorism? 1472

3276
x 2
12
140
400
600

a. 140
b. 400
*c. 600
d. 12

Which partial product is incorrect in the following algorism? 1473

5843
x 3
9
120
240
15000

*a. 240
b. 15000
c. 9
d. 120

Which partial product is incorrect in the following algorism? 1474

1765
x 6
30
360
420
6000

a. 6000
b. 360
c. 30
*d. 420

Which partial product is incorrect in the following algorism? 1475

8439
x 4
36
120
1600
3200

a. 36
*b. 3200
c. 120
d. 1600

Which partial product is incorrect in the following algorisms? 1476

5976
x 7
42
490
6300
3500

a. 42
*b. 3500
c. 490
d. 6300

Source: Addison-Wesley, Elementary School Math 5, p. 97.

THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF THE MULTIPLICATION ALGORISM BY IDENTIFYING THE MISSING PARTIAL PRODUCT FROM A GROUP OF PRODUCTS. 0213

Circle the number which is missing in the algorism below. 1477

375
x 5
25
350
_____
_____

a. 150
*b. 1500
c. 15000

Circle the number below which is missing in the algorism. 1478

532
x 4
8
____
2000

*a. 120
b. 1200
c. 12

Circle the number below which is missing in the algorism. 1479

487
x 7
____
560
2800

a. 9
*b. 49
c. 490

Circle the number below which is missing in the algorism. 1480

832
x 6
18
120
____
____

a. 48
b. 480
*c. 4800

Circle the number below which is missing in the algorism. 1481

293
x 6
18
540
____
____

*a. 1200
b. 12
c. 120

Circle the number below which is missing in the algorism. 1482

675
x 4
280
2400

a. 0
*b. 20
c. 200

Circle the number below which is missing in the algorism. 1483

637
x 8
56
4800

a. 2400
b. 24
*c. 240

Circle the number below which is missing in the algorism. 1484

518
x 8
80
4000

*a. 64
b. 4
c. 640

Circle the number below which is missing in the algorism. 1485

869
x 4
36
240

a. 320
b. 32
*c. 3200

Circle the number below which is missing in the algorism. 1486

$$\begin{array}{r} 683 \\ \underline{\times\ 9} \\ 27 \\ \underline{} \\ \underline{5400} \end{array}$$

a. 72
b. 7200
*c. 720

Source: Merrill, Discovering Math, 5, p. 59.

THE STUDENT WILL ANALYZE THE SECOND STEP IN A MULTIPLICATION ALGORISM TO DETERMINE WHAT FACTORS ARE BEING MULTIPLIED, BY IDENTIFYING THE CORRECT FACTORS FROM A LIST. 0214

Study the following algorism. Circle the two factors for the partial product "2150". 1487

$$\begin{array}{r} 43 \\ \underline{\times 56} \\ 258 \\ \underline{2150} \\ 2408 \end{array}$$

a. 56 x 43
b. 5 x 43
*c. 50 x 43

Study the following algorism. Circle the two factors for the partial product "1040". 1488

$$\begin{array}{r} 52 \\ \underline{\times 26} \\ 312 \\ \underline{1040} \\ 1352 \end{array}$$

*a. 20 x 52
b. 2 x 52
c. 26 x 52

Study the following algorism. Circle the two factors for the partial product "3420". 1489

```
  38
 x94
 152
3420
3572
```

a. 94 x 38
b. 9 x 38
*c. 90 x 38

Study the following algorism. Circle the two factors for the partial product "2280". 1490

```
  76
 x38
 608
2280
2888
```

a. 3 x 76
*b. 30 x 76
c. 38 x 76

Study the following algorism. Circle the two factors for the partial product "4270". 1491

```
  61
 x75
 305
4270
4575
```

*a. 70 x 61
b. 75 x 61
c. 7 x 61

Study the following algorism. Circle the two factors for the partial product "6640". 1492

$$\begin{array}{r} 83 \\ \underline{x87} \\ 581 \\ \underline{6640} \\ 7221 \end{array}$$

a. 87 x 83
b. 8 x 83
*c. 80 x 83

Study the following algorism. Circle the two factors for the partial product "5700". 1493

$$\begin{array}{r} 95 \\ \underline{x67} \\ 665 \\ \underline{5700} \\ 6365 \end{array}$$

*a. 60 x 95
b. 6 x 95
c. 67 x 95

Study the following algorism. Circle the two factors for the partial product "5130". 1494

$$\begin{array}{r} 57 \\ \underline{x98} \\ 456 \\ \underline{5130} \\ 5586 \end{array}$$

a. 9 x 57
*b. 90 x 57
c. 98 x 57

Study the following algorism. Circle the two factors for the partial product "3900". 1495

```
 78
x52
156
3900
4056
```

a. 52 x 78
*b. 50 x 78
c. 5 x 78

Study the following algorism. Circle the two factors for the partial product "960". 1496

```
 16
x69
144
960
1104
```

a. 6 x 16
b. 69 x 16
*c. 60 x 16

Source: Merrill, Discovering Math. 5, p. 63.

THE STUDENT WILL APPLY HIS KNOWLEDGE OF MULTIPLYING WITH A TWO-DIGIT MULTIPLIER BY IDENTIFYING THE CORRECT PRODUCT FROM A LIST OF PRODUCTS. 0215

Work this problem on paper. Then circle the answer below. 1497

```
 26
x54
```

a. 234
b. 1384
*c. 1404

Work this problem on paper. Then circle the answer below. 1498

78
x23

*a. 1794
b. 390
c. 1774

Work this problem on paper. Then circle the correct product below. 1499

54
x37

*a. 1998
b. 540
c. 1978

Work this problem on paper. Circle the correct product below. 1500

76
x26

a. 1876
*b. 1976
c. 608

Work this problem on paper. Circle the correct product below. 1501

*a. 2499 49
b. 294 x51
c. 2099

Work this problem on paper. Circle the correct product below. 1502

902
x57

a. 10,914
b. 10,124
*c. 51,414

Work this problem on paper. Circle the correct product below. 1503

792
x48

*a. 38,016
b. 9,204
c. 52,006

Work this problem on paper. Circle the correct product below. 1504

256
x25

*a. 6400
b. 1792
c. 6200

Work this problem on paper. Circle the correct product below. 1505

379
x36

a. 12,544
*b. 13,644
c. 3411

Work this problem on paper. Circle the correct product below. 1506

526
x34

a. 3682
b. 17,784
*c. 17,884

Source: Addison-Wesley, Elementary School Math 5, p. 98.

THE STUDENT WILL ANALYZE THE PRINCIPLE OF MULTIPLYING WITH THREE-DIGIT MULTIPLIER BY IDENTIFYING THE CORRECT RENAMING OF THE FACTOR AS ADDENDS. 0216

In the equation 435 x 571 = N, the "435" can be renamed as 1507

a. 40 + 3 + 5
b. 4 + 30 + 5
*c. 400 + 30 + 5

In the equation 287 x 146 = N, the "287" can be renamed as 1508

*a. 200 + 80 + 7
b. 2 + 800 + 7
c. 20 + 87

In the equation 479 x 736 = N, the "479" can be renamed as 1509

a. 40 + 70 + 9
b. 40 + 700 + 9
*c. 400 + 70 + 9

In the equation 597 x 584 = N, the "597" can be renamed as 1510

a. 5 + 900 + 7
*b. 500 + 90 + 7
c. 50 + 9 + 7

In the equation 351 x 167 = N, the "351" can be renamed as 1511

a. 30 + 50 + 1
b. 3 + 500 + 1
*c. 300 + 50 + 1

In the equation 684 x 278 = N, the "684" can be renamed as 1512

*a. 600 + 80 + 4
b. 60 + 8 + 4
c. 6 + 60 + 4

In the equation 575 x 329 = N, the "575" can be renamed as 1513

a. 50 + 7 + 5
b. 5 + 70 + 5
*c. 500 + 70 + 5

In the equation 499 x 495 = N, the "499" can be renamed as 1514

a. 4 + 90 + 9
*b. 400 + 90 + 9
c. 40 + 9 + 9

In the equation 463 x 247 = N, the "463" can be renamed as 1515

*a. 400 + 60 + 3
b. 40 + 6 + 3
c. 40 + 60 + 3

In the equation 516 x 643 = N, the "516" can be renamed as 1516

a. 50 + 1 + 6
b. 5 + 10 + 6
*c. 500 + 10 + 6

Source: Merrill, Discovering Math, 5, p. 198

THE STUDENT WILL APPLY HIS KNOWLEDGE OF MULTIPLICATION WITH A THREE-DIGIT MULTIPLIER BY IDENTIFYING THE CORRECT PRODUCT FROM A LIST OF PRODUCTS. 0217

Work the problem on paper. Circle the correct product below. 1517

679
x843

a. 9,585
b. 77,517
*c. 572,397

Work the problem on paper. Circle the correct product below. 1518

526
x126

*a. 66,276
b. 4,734
c. 18,936

Work the problem on paper. Circle the correct product below. 1519

509
x673

a. 8144
*b. 342,557
c. 41,057

Work the problem on paper. Circle the correct product below. 1520

725
x497

a. 40,600
*b. 360,325
c. 370,295

Work the problem on paper. Circle the correct product below. 1521

865
x700

*a. 605,500
b. 6.055
c. 565,500

Work the problem on paper. Circle the correct product below. 1522

928
x248

a. 13,472
b. 228,684
*c. 230,144

Work the problem on paper. Circle the correct product below. 1523

548
x257

a. 17,536
b. 137,186
*c. 140,836

Work the problem on paper. Circle the correct product below. 1524

872
x436

a. 11,336
*b. 380,192
c. 358,782

Work the problem or paper. Circle the correct product below. 1525

436
x217

a. 16,132
*b. 94,612
c. 93,372

Work the problem on paper. Circle the correct product below. 1526

231
x322

*a. 74,382
b. 1,617
c. 11,712

Source: Harcourt, Brace, Elementary Math 5, p. 59.
Merrill, Discovering Math, 5, p. 199.

THE STUDENT WILL DEMONSTRATE HIS COMPREHENSION OF MULTIPLICATION AS APPLIED TO STORY PROBLEMS BY IDENTIFYING THE CORRECT ANSWER TO THE PROBLEM. 0218

Don helped his father pack blueberries in crates. There were 18 crates with 24 pints of blueberries in each crate. How many pints of blueberries did they pack? 1527

a. 332
*b. 432
c. 42

A peach orchard on Jerry's farm has 18 rows of trees with 16 trees in each row. How many peach trees are in the orchard? 1528

*a. 288
b. 248
c. 126

The paper boy collects $2.45 every month from each of his 87 customers. How much money does he collect in one month? 1529

a. $36.75
*b. $213.15
c. $177.85

Mrs. Steele bought thirty-five cots for her day nursery. Each cot cost $8.79. How much did the cots cost all together? 1530

a. $70.32
b. $295.65
*c. $307.65

Fifty new dictionaries were bought for Jean's school. Each dictionary cost $2.75. What was the total cost of the dictionaries? 1531

a. $135.50
*b. 137.50
c. $13.75

A newsstand receives 175 newspapers each day. How many newspapers are delivered to the newsstand in 310 days? 1532

*a. 54,250
b. 7,000
c. 6,900

Nine hundred seven adult tickets were sold for the senior play. Each ticket cost $1.25. How much money was received from the sale of the adult tickets? 1533

a. $323.75
b. $121.25
*c. $1133.75

The planes of one airline made 750 trips between two cities in one year. The cities were 930 air miles apart. How many miles did these planes fly between the two cities? 1534

*a. 697,500
b. 69,750
c. 90,000

The drugstore in the West Side Plaza has an average of 537 customers each day. Last year, it was open 359 days. About how many customers visited the store last year? 1535

a. 47,793
*b. 192,783
c. 9,129

At one store, play tents sold for $3.98 each. During one season, 236 tents were sold. What was the total amount of money collected from the sale of play tents? 1536

a. $909.28
b. $202.88
*c. $939.28

Source: Merrill, Discovering Math, 5, pp. 67, 202.

GIVEN A LIST OF MULTIPLICATION PROBLEMS, THE STUDENT WILL APPLY HIS KNOWLEDGE OF MULTIPLYING POSITIVE AND NEGATIVE NUMBERS BY EITHER SELECTING THOSE WHICH HAVE A POSITIVE PRODUCT OR THOSE WHICH HAVE A NEGATIVE PRODUCT. 0157

Directions: If the equation has a positive product circle P, if a negative product circle N.

P ~~N~~ -3 x + 2 1537

~~P~~ N +4 x +6 1538

P ~~N~~ -7 x +6 1539

~~P~~ N -8 x -9 1540

~~P~~ N +3 x +4 1541

P ~~N~~ +2 x -1 1542

~~P~~ N -9 x +32 1543

~~P~~ N -43 x -13 1544

P ~~N~~ +29 x -10 1545

P ~~N~~ -15 x +8 1546

~~P~~ N +5 x +6 1547

P ~~N~~ +4 x -25 1548

GIVEN A STORY PROBLEM, THE STUDENT WILL DEMONSTRATE UNDERSTANDING OF MULTIPLICATION OF POSITIVE AND NEGATIVE NUMBERS BY CORRECTLY SELECTING THE EQUATION USED. 0158

Directions: From your knowledge of the postman story, select the equation described below.

The postman brought 3 checks for $3.00 each. 1549

*a. +3 x +3
b. +3 x -3
c. -3 x +3
d. -3 x -3

The postman brought 2 bills for $8.00 each. 1550

a. +2 x +8
b. -2 x +8
*c. +2 x -8
d. -2 x -8

The postman made an error yesterday, today he took away 4 checks for $5.00 each. 1551

a. +4 x -5
*b. -4 x +5
c. -4 x -5
d. +4 x -5

The postman brought 4 bills for $6.00 each. 1552

a. -4 x +6
b. +4 x +6
*c. +4 x -6
d. -4 x -6

The postman made an error yesterday, today he took away 2 bills for $7.00 each. 1553

a. +2 x -7
b. -2 x +7
c. +2 x +7
*d. -2 x -7

The postman brought 3 checks for $1.00 each. 1554

a. +3 x -1
*b. +3 x +1
c. -3 x -1
d. -3 x +1

Source: Dr. A. Hart.

WHOLE NUMBER DIVISION

THE STUDENT WILL DEMONSTRATE AN UNDERSTANDING OF THE RELATIONSHIP BETWEEN DIVISION AND REPEATED SUBTRACTION BY IDENTIFYING THE NUMBER OF TIMES A GIVEN DIVISOR CAN BE SUBTRACTED FROM A GIVEN DIVIDEND. 0198

How many times can 3 be subtracted from 42? 1555

a. 7
*b. 14
c. 13

How many times can 6 be subtracted from 24? 1556

*a. 4
b. 6
c. 8

How many times can 4 be subtracted from 28? 1557

*a. 7
b. 6
c. 8

How many times can 9 be subtracted from 72? 1558

a. 7
*b. 9
c. 8

How many times can 7 be subtracted from 49? 1559

a. 8
b. 5
*c. 7

How many times can 5 be subtracted from 75? 1560

*a. 15
b. 10
c. 7

How many times can 10 be subtracted from 90? 1561

a. 8
b. 7
*c. 9

How many times can 9 be subtracted from 63? 1562

a. 8
*b. 7
c. 6

How many times can 8 be subtracted from 40? 1563

*a. 5
b. 4
c. 7

How many times can 6 be subtracted from 54? 1564

a. 8
b. 7
*c. 9

Source: Harcourt, Brace, Elementary Math, 5., p. 61.

THE STUDENT WILL VIEW THE OPERATION OF REPEATED SUBTRACTION IN RELATIONSHIP TO DIVISION BY IDENTIFYING A CORRECTLY FORMULATED DIVISION EQUATION. 0199

If you can subtract 4 from 32 eight times, this tells you that 1565

a. $4 \times 8 = 32$
*b. $32 \div 4 = 8$
c. $32 \div 8 = 4$

If you can subtract 8 from 56 seven times, this tells you that 1566

*a. $56 \div 8 = 7$
b. $56 \div 7 = 8$
c. $8 \times 7 = 56$

If you can subtract 5 from 30 six times, this tells you that 1567

*a. $30 \div 5 = 6$
b. $6 \times 5 = 30$
c. $30 \div 6 = 5$

If you can subtract 87 from 261 three times, this tells you that 1568

a. $261 \div 3 = 87$
*b. $261 \div 87 = 3$
c. $3 \times 87 = 261$

If you can subtract 45 from 135 three times, this tells you that 1569

a. $135 \div 3 = 45$
b. $3 \times 45 = 135$
*c. $135 \div 45 = 3$

If you can subtract 76 from 304 four times, this tells you that 1570

a. $76 \times 4 = 304$
b. $304 \div 4 = 76$
*c. $304 \div 76 = 4$

If you can subtract 92 from 239 twice, with a number remaining, this tells you that 1571

a. 239 = (2 x 92) + 55
b. 239 ÷ 55 = 92
c. 239 ÷ 92 = 2
*d. 239 ÷ 92 = 2 r. 55

If you can subtract 87 from 522 six times, this tells you that 1572

a. 522 ÷ 6 = 87
*b. 522 ÷ 87 = 6
c. 87 x 6 = 522

If you can subtract 95 from 415 four times with a number remaining, tells you that 1573

*a. 415 ÷ 95 = 4 r. 35
b. 415 = (4 x 95) + 35
c. 415 ÷ 4 = 95 ÷ 35
d. 415 ÷ 95 = 4

If you can subtract 52 from 281 five times with a number remaining, this tells you that 1574

a. 281 = (5 x 52) + 21
b. 281 ÷ 5 = 52
*c. 281 ÷ 52 = 5 r. 21
d. 281 ÷ 5 = 52 + 21

Source: Harcourt, Brace, Elementary Math, 5, p. 61.

THE STUDENT CAN APPLY HIS KNOWLEDGE OF THE PROPERTIES OF DIVISION TO SOLVE PROBLEMS WITH MULTIPLE DIGITS IN THE DIVIDEND OR DIVISOR OR IN BOTH. 0058

The answer to a division problem is called 1575

a. dividend
b. divisor
c. remainder
*d. quotient

Division problems can be expressed in different ways. Which of these is not division? 1576

a. $3\overline{)99}$
b. $99 \div 3 = n$
c. $n \times 3 = 99$
d. $\frac{99}{3} = n$
*e. $\frac{n}{99} = 3$

If you know the number of elements in each set and the total number of elements, what must you do to find the number of equivalent sets? 1577

a. add
b. subtract
c. multiply
*d. divide

Find the quotient $7\overline{)\,2842}$ 1578

*a. 406
b. 46
c. 45 r 6
d. 405 r 6

Solve for the unknown $\frac{535}{5} = \square$ 1579

a. 17
*b. 107
c. 16
d. 106

Solve $436 \div 4 = \square$ 1580

a. is not starred:

a. 18 r 4
b. 19
c. 108
*d. 109

Solve $\square = 648 \div 8$ 1581

*a. 81
b. 810
c. 90
d. 801

Solve $\square = \frac{810}{9}$ 1582

a. 9
b. 99
*c. 90
d. 109

Solve by division $6\overline{)162}$ 1583

*a. 27
b. 12
c. 26
d. 32

Solve for the quotient $\frac{462}{7} =$ 1584

a. 68
b. 56
c. 76
*d. 66

Solve $(24 \div 8) \div 1 = n$ 1585

n = a. 1
b. 2
*c. 3
d. 4

Solve $(54 \div 6) \div 3 = n$ 1586

n = *a. 3
b. 2
c. 1
d. 0

$54 \div (6 \div 3) = n$ 1587

n = a. 3
b. 2
c. 8
*d. 27

$(48 \div (6 \div 2) = n$ 1588

n = a. 3
b. 6
c. 12
*d. 16

$72 \div (9 \div 3) = n$ 1589

n = a. 8
*b. 24
c. 27
d. 34

$876 \div 6 =$ 1590

a. 129
b. 136
*c. 146
d. 148

_____ $= 630 \div 6$ 1591

*a. 105
b. 15
c. 16
d. 106

$\frac{5632}{7}$ = ______ 1592

a. 84 r 4
b. 794 r 4
c. 790 r 2
*d. 804 r 4

THE STUDENT RECALLS THE PROPERTIES OF DIVISION BY SELECTING THE PROPERTY IN A GIVEN ILLUSTRATION. 0059

Division has 1593

*a. identity element of one
b. commutative properties
c. identity element of zero
d. associative properties

Division is the inverse operation of ____________. 1594

a. addition
b. subtraction
*c. multiplication
d. mathematics

When one factor and the product are the same, the other factor is ____________. 1595

a. same
b. other
*c. one
d. product

If zero is the product we know one of the factors is ________. 1596

a. one
b. any number
*c. zero
d. impossible to know

If one is a factor, the other factor and the product will be ____________. 1597

a. the opposite
b. one
c. zero
*d. the same

When we know the number of equivalent subsets in a given set we can find the 1598

*a. elements in each subset
b. product of all subsets
c. number of subsets
d. cardinal number of the set

Given the equation $(a + b) \div c = (a \div c) + (b \div c)$ tells us division is usually 1599

a. associative
b. commutative
*c. distributive

Which term does not belong to the language of division? 1600

*a. subtrahend
b. divisor
c. dividend
d. quotient

Division is not closed because often you have a _________. 1601

*a. remainder
b. quotient
c. divisor
d. dividend

The number sentences a ÷ b = q + r, (q x b) + r, or a - (q x b) = r tells us "a" 1602

a. is an even whole number
b. is an odd whole number
*c. cannot be divided evenly
d. is the remainder

If a x b = c is a true statement, then it can also be written 1603

a. + b = c
b. c - a = b
*c. c ÷ a = b
d. a ÷ c = b

7 ÷ 0 = 1604

a. 0
b. 7
c. 1
*d. no answer

What operation can you use to find the number of equivalent disjoint subsets of 6 elements each formed from a set of 54 elements? 1605

a. addition
b. subtraction
c. multiplication
* d. division

Using the distributive property of division over addition 360 ÷ 8 would be 1606

*a. (320 + 40) ÷ 8
b. (360 - 40) ÷ 8
c. (360 x 40) ÷ 8
d. (360 ÷ 8) + 40

THE CHILD WILL DEMONSTRATE HIS COMPREHENSION OF DIVISION OF MULTIPLES OF TEN BY IDENTIFYING THE CORRECT EQUATION FOR A GIVEN DIVIDEND AND DIVISOR. 0204

Circle the equation which correctly completes the open sentence 1607
$56 \div 8 = N$

a. $56 \div 8 = 70$
*b. $56 \div 8 = 7$
c. $56 \div 8 = 9$

Circle the equation which correctly completes the open sentence 1608
$400 \div 5 = N$

*a. $400 \div 5 = 80$
b. $400 \div 5 = 8$
c. $400 \div 5 = 800$

Circle the equation which correctly completes the open sentence 1609
$270 \div 3 = N$

*a. $270 \div 3 = 90$
b. $270 \div 3 = 9$
c. $270 \div 3 = 900$

Circle the equation which correctly completes the open sentence 1610
$5400 \div 9 = N$

a. $5400 \div 9 = 60$
b. $5400 \div 9 = 6$
*c. $5400 \div 9 = 600$

Circle the equation which correctly completes the open sentence 1611
$490 \div 7 = N$

a. $490 \div 7 = 700$
*b. $490 \div 7 = 70$
c. $490 \div 7 = 7$

Circle the equation which correctly completes the open sentence 1612
2400 ÷ 6 = N

*a. 2400 ÷ 6 = 400
b. 2400 ÷ 6 = 40
c. 2400 ÷ 6 = 4

Circle the equation which correctly completes the open sentence 1613
210 ÷ 7 = N

a. 210 ÷ 7 = 300
*b. 210 ÷ 7 = 30
c. 210 ÷ 7 = 3

Circle the equation which correctly completes the open sentence 1614
240 ÷ 60 = N

a. 240 ÷ 60 = 40
b. 240 ÷ 60 = 400
*c. 240 ÷ 60 = 4

Circle the equation which correctly completes the open sentence 1615
1800 ÷ 20 = N

a. 1800 ÷ 20 = 900
b. 1800 ÷ 20 = 9
*c. 1800 ÷ 20 = 90

Circle the equation which correctly completes the open sentence 1616
2700 ÷ 30 = N

*a. 2700 ÷ 30 = 90
b. 2700 ÷ 30 = 9
c. 2700 ÷ 30 = 900

Source: Discovering Math, Merrill, p. 42.

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF THE BASIC FACTS OF DIVISION BY RECALLING THE CORRECT QUOTIENT FROM A GROUP OF QUOTIENTS, WHEN GIVEN THE DIVIDEND AND DIVISOR. 0206

Circle the correct quotient for the fact: $63 \div 7 = N$ 1617

a. 8
b. 7
*c. 9

Circle the correct quotient for the fact: $72 \div 9 = N$ 1618

*a. 8
b. 9
c. 6

Circle the correct quotient for the fact: $35 \div 7 = N$ 1619

*a. 5
b. 7
c. 6

Circle the correct quotient for the fact: $49 \div 7 = N$ 1620

a. 8
*b. 7
c. 9

Circle the correct quotient for the fact: $32 \div 4 = N$ 1621

a. 7
*b. 8
c. 6

Circle the correct quotient for the fact: 24 ÷ 6 = N 1622

a. 6
*b. 4
c. 8

Circle the correct quotient for the fact: 0 ÷ 5 = N 1623

*a. 0
b. 5
c. 1

Circle the correct quotient for the fact: 27 ÷ 3 = N 1624

a. 7
b. 3
*c. 9

Circle the correct quotient for the fact: 56 ÷ 8 = N 1625

a. 8
b. 9
*c. 7

Circle the correct quotient for the fact: 25 ÷ 5 = N 1626

*a. 5
b. 6
c. 4

Circle the correct quotient for the fact: 36 ÷ 4 = N 1627

a. 6
*b. 9
c. 5

Circle the correct quotient for the fact: 32 ÷ 8 = N 1628

a. 3
b. 9
*c. 4

Circle the correct quotient for the fact: 45 ÷ 9 = N 1629

*a. 5
b. 4
c. 6

Circle the correct quotient for the fact: 42 ÷ 6 = N 1630

a. 6
b. 9
*c. 7

Circle the correct quotient for the fact: 64 ÷ 8 = N 1631

a. 9
*b. 8
c. 6

Circle the correct quotient for the fact: 40 ÷ 5 = N 1632

a. 6
b. 9
*c. 8

Circle the correct quotient for the fact: 54 ÷ 9 = N 1633

*a. 6
b. 8
c. 7

Circle the correct quotient for the fact: 45 ÷ 5 = N 1634

*a. 9
b. 6
c. 8

Circle the correct quotient for the fact: 15 ÷ 5 = N 1635

a. 1
b. 5
*c. 3

Circle the correct quotient for the fact: 20 ÷ 5 = N 1636

a. 5
*b. 4
c. 3

Circle the correct quotient for the fact: 28 ÷ 7 = N 1637

a. 3
b. 9
*c. 4

Circle the correct quotient for the fact: 48 ÷ 8 = N 1638

*a. 6
b. 8
c. 5

Circle the correct quotient for the fact: 21 ÷ 7 = N 1639

a. 4
*b. 3
c. 2

Circle the correct quotient for the fact: $5 \div 0 = N$ 1640

*a. 5
b. 0
c. 1

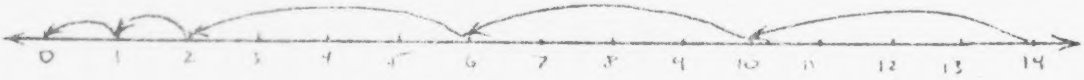
Circle the correct quotient for the fact: $30 \div 5 = N$ 1641

a. 5
b. 7
*c. 6

Source: Merrill, Discovering Math. 5, p. 39.

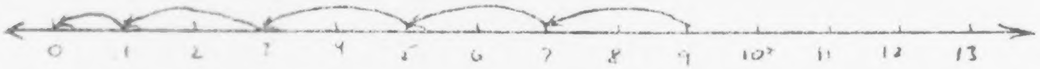
THE STUDENT WILL ANALYZE A NUMBER LINE PRESENTING DIVISION WITH A REMAINDER BY CORRECTLY IDENTIFYING A FORMULATED DIVISION EQUATION. 0220

Study the number line carefully. Circle the equation which is pictured on the number line. 1642



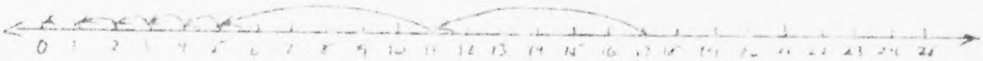
a. $14 \div 4 = 3$
*b. $14 \div 4 = 3r2$
c. $14 \div 3 = 4r2$

Study the number line carefully. Circle the equation which is pictured on the number line. 1643



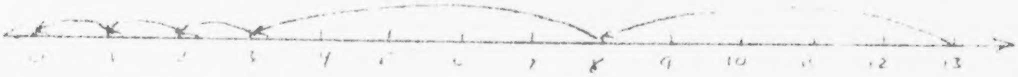
a. $9 \div 2 = 4$
*b. $9 \div 2 = 4r1$
c. $9 \div 4 = 2r1$

Study the number line carefully. Circle the equation which is pictured on the number line. 1644


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

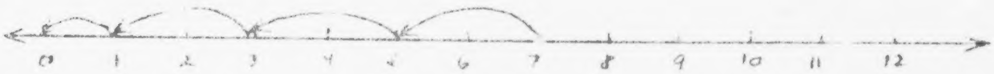
a. $17 \div 6 = 5r2$
b. $17 \div 6 = 5$
*c. $17 \div 6 = 2r5$

Study the number line carefully. Circle the equation which is pictured on the number line. 1645


0 1 2 3 4 5 6 7 8 9 10 11 12 13

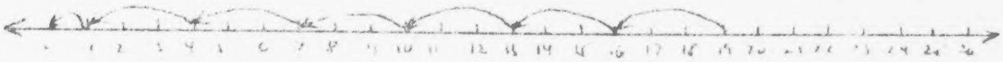
*a. $13 \div 5 = 2r3$
b. $13 \div 5 = 2$
c. $13 \div 5 = 3r2$

Study the number line carefully. Circle the equation which is pictured on the number line. 1646


0 1 2 3 4 5 6 7 8 9 10 11 12

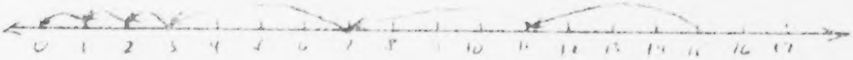
a. $7 \div 3 = 2$
b. $7 \div 2 = 3$
*c. $7 \div 2 = 3r1$

Study the number line carefully. Circle the equation which is pictured on the number line. 1647


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26

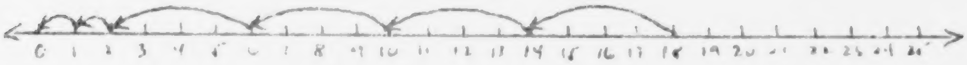
*a. $19 \div 3 = 6r1$
b. $19 \div 3 = 6$
c. $19 \div 6 = 3$

Study the number line carefully. Circle the equation which is pictured on the number line. 1648



*a. 15 ÷ 4 = 3r3
b. 15 ÷ 3 = 4r3
c. 15 ÷ 4 = 3

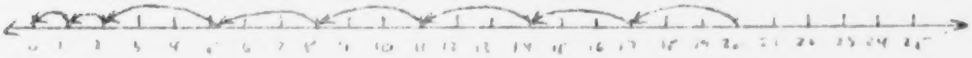
Study the number line carefully. Circle the equation which is pictured on the number line. 1649



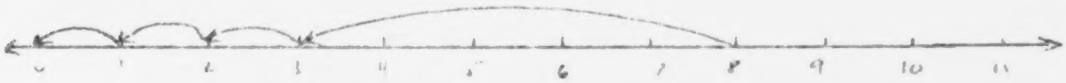
*a. 18 ÷ 4 = 4r2
b. 18 ÷ 4 = 4
c. 18 ÷ 4 = 4r4

Study the number line carefully. Circle the equation which is pictured on the number line. 1650

a. 20 ÷ 3 = 6
b. 20 ÷ 6 = 3
*c. 20 ÷ 3 = 6r2



Study the number line carefully. Circle the equation which is pictured on the number line. 1651



a. 8 ÷ 1 = 5r3
*b. 8 ÷ 5 = 1r3
c. 8 ÷ 1 = 8

Source: Discovering Math 5, Merrill, p. 40.

THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF THE RELATION SIGN AS A PREPARATION FOR DIVISION, BY IDENTIFYING A CORRECTLY FORMULATED EQUATION. 0221

Choose the largest whole number that makes the sentence true. 1652

$N \times 5 \; \underline{\ \leq\ } \; 48$

a. 6
*b. 9
c. 12

Choose the largest whole number that makes the sentence true. 1653

$N \times 9 \; \underline{\ \leq\ } \; 78$

*a. 8
b. 9
c. 7

Choose the largest whole number that makes the sentence true. 1654

$N \times 6 \; \underline{\ \leq\ } \; 45$

a. 6
b. 8
*c. 7

Choose the largest whole number that makes the sentence true. 1655

$N \times 8 \; \underline{\ \leq\ } \; 55$

*a. 6
b. 7
c. 5

Choose the largest whole number that makes the sentence true. 1656

$N \times 6 \ \underline{\ \leq\ }\ 287$

a. 30
b. 50
*c. 40

Choose the largest whole number that makes the sentence true. 1657

$N \times 9 \ \underline{\ \leq\ }\ 55$

*a. 6
b. 8
c. 7

Choose the largest whole number that makes the sentence true. 1658

$N \times 3 \ \underline{\ \leq\ }\ 294$

a. 80
b. 100
*c. 90

Choose the largest whole number that makes the sentence true. 1659

$N \times 5 \ \underline{\ \leq\ }\ 444$

a. 70
*b. 80
c. 90

Choose the largest whole number that makes the sentence true. 1660

$N \times 7 \ \underline{\ \leq\ }\ 4307$

*a. 600
b. 800
c. 700

Choose the largest whole number that makes the sentence true. 1661

$N \times 8 \leq 7732$

a. 800
b. 700
*c. 900

Source: Discovering Math. 5, Merrill, p. 78.

THE STUDENT WILL APPLY HIS KNOWLEDGE OF DIVISION WITH ONE-DIGIT DIVISORS WHERE THERE IS A REMAINDER IN THE QUOTIENT BY CORRECTLY IDENTIFYING QUOTIENTS. 0222

Compute the problem carefully on paper. Circle the correct quotient below. 1662

$7\overline{)29}$

*a. 4r1
b. 3r2
c. 4r2

Compute the problem carefully on paper. Circle the correct quotient below. 1663

$9\overline{)68}$

a. 8r1
b. 7r3
*c. 7r5

Compute the problem carefully on paper. Circle the correct quotient below. 1664

$8\overline{)44}$

a. 5r2
*b. 5r4
c. 7r2

Compute the problem carefully on paper. Circle the correct quotient below. 1665

4)299

a. 73r7
b. 74r1
*c. 74r3

Compute the problem carefully on paper. Circle the correct quotient below. 1666

9)754

*a. 83r7
b. 83r8
c. 93r2

Compute the problem carefully on paper. Circle the correct quotient below. 1667

8)487

a. 60r6
b. 80r7
*c. 60r7

Compute the problem carefully on paper. Circle the correct quotient below. 1668

9)293

a. 43r5
*b. 32r5
c. 32r5

Compute the problem carefully on paper. Circle the correct quotient below. 1669

8)5030

*a. 628r6
b. 629r2
c. 628r4

Compute the problem carefully on paper. Circle the correct quotient below. 1670

5)3641

a. 727r6
b. 728r5
*c. 728r1

Compute the problem carefully on paper. Circle the correct quotient below. 1671

8)31254

*a. 3906r6
b. 396r6
c. 395r8

Source: Discovering Math. 5, Merrill, p. 78.
Elementary School Math 5, Addison-Wesley, pp. 107, 109, 113.

THE STUDENT WILL ANALYZE THE RENAMING OF A DIVIDEND BY IDENTIFYING THE CORRECTLY RENAMED DIVIDEND. 0223

In the problem 1296 ÷ 3, the "1296"can be renamed 1672

a. 1200 + 96
*b. 1200 + 90 + 6
c. 12 + 9 + 6

In the problem 936 ÷ 3, the "936" can be renamed 1673

*a. 900 + 30 + 6
b. 93 + 6
c. 90 + 36

In the problem 1869 ÷ 3, the "1869" can be renamed 1674

a. 18 + 69
*b. 1800 + 60 + 9
c. 186 + 9

In the problem 216 ÷ 2, the "216" can be renamed 1675

*a. 210 + 6
b. 200 + 16
c. 200 + 10 + 6

In the problem 427 ÷ 7, the number "427" can be renamed 1676

a. 400 + 20 + 7
b. 400 + 27
*c. 420 + 7

In the problem 328 ÷ 4, the number "328" can be renamed 1677

*a. 320 + 8
b. 300 + 20 + 8
c. 300 + 28

In the problem 186 ÷ 2, the number "186" can be renamed 1678

*a. 100 + 80 + 6
b. 18 + 86
c. 180 + 6

In the problem 6822 ÷ 2, the number "6822" can be renamed 1679

a. 600 + 80 + 22
*b. 6000 + 800 + 22
c. 6000 + 820 + 2

In the problem 1569 ÷ 3, the number "1569" can be renamed 1680

*a. 1500 + 60 + 9
b. 150 + 69
c. 1500 + 6 + 9

[illegible]

a. 280 + 6

In the problem 286 ÷ 2, the number "286" can be renamed 1681

*c. 200 + 80 + 6

a. 280 + 6
b. 200 + 86

Source: Merrill, _Discovering Math. 5_, p. 82

THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF A TWO-PLACE DIVISOR BY IDENTIFYING A CORRECTLY FORMULATED EQUATION. [illegible]

Choose the _largest_ whole number that makes the sentence true. 1682

$N \times 30 \leq 265$

a. 7
*b. 8
c. 9

Choose the _largest_ whole number that makes the sentence true. [illegible]

$N \times 40 \leq 252$

*a. 6
b. 7
c. 9

Choose the _largest_ whole number that makes the sentence true. 1684

$N \times 70 \leq 420$

a. 7
b. 3
*c. 6

Choose the _largest_ whole number that makes the sentence true.

$N \times 50 \leq 173$

a. 2
*b. 3
c. 4

Choose the largest whole number that makes the sentence true. 1686

$N \times 70 \leq 654$

- *a. 9
- b. 7
- c. 8

Choose the largest whole number that makes the sentence true. 1687

$N \times 40 \leq 314$

- a. 9
- b. 8
- *c. 7

Choose the largest whole number that makes the sentence true. 1688

$N \times 90 \leq 360$

- *a. 4
- b. 5
- c. 3

Choose the largest whole number that makes the sentence true. 168

$N \times 50 \leq 487$

- a. 7
- *b. 9
- c. 8

Choose the largest whole number that makes the sentence true. 1690

$N \times 90 \leq 731$

- *a. 8
- b. 9
- c. 7

Choose the largest whole number that makes the sentence true. 1691

$N \times 70 \leq 434$

*a. 6
b. 7
c. 9

Source: Merrill, Discovering Math. 5, p. 87, 88

THE STUDENT WILL APPLY HIS KNOWLEDGE OF DIVISION WITH A TWO-PLACE DIVISOR ENDING IN ZERO BY IDENTIFYING THE CORRECT QUOTIENT TO A GIVEN PROBLEM. 0225

Compute the problem on paper. Circle the correct quotient below. 1692

$70\overline{)560}$

*a. 8
b. 80
c. 7

Compute the problem on paper. Circle the correct quotient below. 1693

$40\overline{)240}$

a. 60
b. 70
*c. 6

Compute the problem on paper. Circle the correct quotient below. 1694

$60\overline{)540}$

a. 7
b. 70
*c. 9

Compute the problem on paper. Circle the correct quotient below. 1695

$50\overline{)200}$

a. 8
*b. 4
c. 40

Compute the problem on paper. Circle the correct quotient below. 1696

$60\overline{)480}$

*a. 8
b. 70
c. 7

Compute the problem on paper. Circle the correct quotient below. 1697

$40\overline{)287}$

a. 77
*b. 7 r 7
c. 70 r 7

Compute the problem on paper. Circle the correct quotient below. 1698

$90\overline{)830}$

a. 90 r 2
b. 92
*c. 9 r 20

Compute the problem on paper. Circle the correct quotient below. 1699

$70\overline{)674}$

a. 90 r 44
*b. 9 r 44
c. 94 r 4

Compute the problem on paper. Circle the correct quotient below. 1700

$80\overline{)517}$

a. 63 r 7
b. 60 r 37
*c. 6 r 37

Compute the problem on paper. Circle the correct quotient below. 1701

$60\overline{)400}$

*a. 6 r 40
b. 64
c. 60 r 4

Source: Merrill, Discovering Math. 5, pp. 88 and 89.

THE STUDENT WILL APPLY HIS UNDERSTANDING OF DIVISION WITH A TWO-PLACE DIVISOR ENDING IN ZERO, WHEN PRESENTED IN A STORY PROBLEM BY IDENTIFYING THE CORRECT ANSWER TO THE PROBLEM. 0227

There are 257 washers in a box. If 30 washers are put in each package, how many packages will there be? How many extra washers? 1702

a. 7 packages and 47 washers.
b. 81 packages and 7 washers.
*c. 8 packages and 17 washers.

463 baseball cards were divided among 70 boys. Each boy received the same number of cards. How many cards did each receive? 1703

*a. 6
b. 7
c. 60

There are 30 children in a class. The sum of all their spelling scores is 2610. Find the average score. 1704

a. 78
b. 85
*c. 87

A passenger coach on a train holds 70 people. In the year 1810 the population of the state of Michigan was 4760. How many passenger coaches would have been needed to hold all of the people in the state of Michigan? 1705

a. 26
*b. 68
c. 93

If an auto averages 50 miles per hour, how long will it take to go 1850 miles? 1706

*a. 37 hrs.
b. 370 hrs.
c. 39 hrs.

A bus holds 60 children. There are 645 children in a school. How many busses will be needed to take all the children to the zoo? 1707

a. 10 busses
*b. 11 busses
c. 11½ busses

There are 2780 books in the school library. If each shelf holds 50 books, how many shelves will be needed? 1708

a. 50
b. 45
*c. 55

A man works 50 weeks in a year. If he earns $8750 in a year, how much does he earn each week? 1709

a. $1.75
*b. $175.00
c. $115.00

Twenty children are filling candy boxes for the school fair. If they fill 800 boxes, how many did each child average? 1710

*a. 40 boxes
b. 4 boxes
c. 400 boxes

Some snails can go 50 yards per hour. How many hours will it take a snail to go 495 yards? 1711

a. 9 hrs.
b. 10 hrs.
*c. almost 10 hrs.

Source: Addison-Wesley, Elementary School Math, 5, pp. 117, 127.

THE STUDENT WILL DEMONSTRATE AN UNDERSTANDING OF ROUNDING OFF DIVISORS AS AN AID TO DIVISION BY IDENTIFYING A CORRECTLY ROUNDED DIVISOR. 0228

In the problem 365 ÷ 58, would you round 58 to 1712

a. 50
*b. 60
c. 55

In the problem 268 ÷ 48, would you round 48 to 1713

*a. 50
b. 45
c. 40

In the problem 201 ÷ 29, would you round 29 to 1714

*a. 30
b. 20
c. 25

In the problem 434 ÷ 67, would you round 67 to 1715

a. 65
b. 60
*c. 70

In the problem 643 ÷ 79, would you round the 79 to 1716

a. 70
*b. 80
c. 75

In the problem 453 ÷ 42, would you round the 42 to 1717

a. 50
b. 45
*c. 40

In the problem 990 ÷ 43, would you round the 43 to 1718

*a. 40
b. 50
c. 30

In the problem 506 ÷ 97, would you round the 97 to 1719

*a. 100
b. 90
c. 95

In the problem 214 ÷ 49, would you round the 49 to 1720

a. 45
b. 40
*c. 50

In the problem 253 ÷ 53, would you round the 53 to 1721

*a. 50
b. 60
c. 55

Source: Merrill, Discovery Math. 5, p. 91

THE STUDENT WILL APPLY HIS KNOWLEDGE OF DIVIDING WITH A TWO-PLACE DIVISOR BY IDENTIFYING THE MISSING FACTOR IN AN EQUATION. 0229

In the open sentence 241 = (26x9) + N, the "N" is 1722

*a. 7
b. 4
c. 6

In the open sentence 187 = (Nx7) + 5, the "N" is 1723

a. 24
b. 30
*c. 26

In the open sentence 380 = (Nx31) + 8, the "N" is 1724

*a. 12
b. 11
c. 8

In the open sentence 262 = (43x6) + N, the "N" is 1725

a. 3
*b. 4
c. 5

In the open sentence 2,073 = (32x64) + N, the "N" is 1726

a. 35
b. 20
*c. 25

In the open sentence 333 = (Nx4) + 1, the "N" is 1727

*a. 83
b. 81
c. 84

In the open sentence 1,894 = (Nx54) + 4, the "N" is 1728

a. 30
b. 25
*c. 35

In the open sentence 294 = (5x58) + N, the "N" is 1729

a. 3
*b. 4
c. 5

In the open sentence 3,222 = (76x42) + N, the "N" is 1730

a. 20
b. 35
*c. 30

In the open sentence 1,789 = (Nx81) + 7, the "N" is 1731

*a. 22
b. 23
c. 32

Source: Harcourt, Brace, Elementary Math. 5, p. 144.

THE STUDENT WILL APPLY HIS KNOWLEDGE OF DIVIDING WITH A TWO-PLACE DIVISOR BY CORRECTLY IDENTIFYING THE QUOTIENTS TO GIVEN PROBLEMS. 0230

Compute the problem on paper. Circle the correct quotient below. 1732

$59\overline{)253}$

a. 41 r 7
b. 40 r 17
*c. 4 r 17

Compute the problem on paper. Circle the correct quotient below. 1733

$88\overline{)723}$

*a. 8 r 19
b. 81 r 9
c. 8 r 29

Compute the problem on paper. Circle the correct quotient below. 1734

$49\overline{)214}$

*a. 4 r 18
b. 41 r 8
c. 4 r 8

Compute the problem on paper. Circle the correct quotient below. 1735

$79\overline{)643}$

a. 81 r 1
*b. 8 r 11
c. 8 r 12

Compute the problem on paper. Circle the correct quotient below. 1736

$98\overline{)724}$

a. 7 r 28
b. 8 r 8
*c. 7 r 38

Compute the problem on paper. Circle the correct quotient below. 1737

$73\overline{)4563}$

- a. 623 r 7
- *b. 62 r 37
- c. 62 r 7

Compute the problem on paper. Circle the correct quotient below. 1738

$53\overline{)4937}$

- *a. 93 r 8
- b. 92 r 18
- c. 93 r 18

Compute the problem on paper. Circle the correct quotient below. 1739

$92\overline{)2147}$

- *a. 23 r 31
- b. 231 r 1
- c. 23 r 3

Compute the problem on paper. Circle the correct quotient below. 1740

$72\overline{)1498}$

- a. 20 r 59
- b. 21 r 8
- *c. 20 r 58

Compute the problem on paper. Circle the correct quotient below. 1741

$63\overline{)5740}$

- a. 91 r 17
- *b. 91 r 7
- c. 9 r 17

Source: Merrill, Discovering Math. 5, p. 99.

THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF AN EXACT QUOTIENT BY IDENTIFYING A CORRECT QUOTIENT WITH A FRACTIONAL REMAINDER. 0231

Seven cup cakes are to be shared equally by two boys. Each boy will receive 1742

a. 4 cupcakes
*b. 3½ cupcakes
c. 2 1/3 cupcakes

Seven small pies are to be shared equally by 3 girls. Each girl will receive 1743

*a. 2 1/3 pies
b. 3 1/2 pies
c. 2 1/2 pies

8 candy bars are to be shared equally by 3 boys. Each boy will receive 1744

a. 2 1/3 bars
b. 2 1/2 bars
*c. 2 2/3 bars

Five boys are to share 12 sheets of art paper. Each boy will receive 1745

*a. 2 2/5
b. 2 1/5
c. 2 1/12

Fourteen cookies are to be equally divided among 3 girls. Each girl will receive 1746

a. 4 1/2 cookies
b. 4 2/14 cookies
*c. 4 2/3 cookies

Five cupcakes are to be equally divided among 4 girls. Each girl will receive 1747

a. 1 1/5 cupcake
*b. 1 1/4 cupcake
c. 1 1/2 cupcake

Twenty-five strings of licorice are to be equally divided between 2 boys. Each boy will receive 1748

*a. 12 1/2 strings
b. 12 1/12 strings
c. 12 1/4 strings

Ten bars of candy are to be divided equally between 3 girls. Each girl will receive 1749

a. 3 2/3
b. 3 1/2
*c. 3 1/3

Twenty-four doughnuts are to be shared equally by 16 boys. Each boy will receive 1750

a. 2 1/2 doughnuts
b. 1 1/4 doughnuts
*c. 1 1/2 doughnuts

Twelve yards of material is to be shared by 8 girls equally. Each girl will receive 1751

a. 1 1/8 yards
*b. 1 1/2 yards
c. 1 1/12 yards

Source: Harcourt, Brace, Elementary Math. 5, p. 308

THE STUDENT WILL ANALYZE SITUATIONS REGARDING A DIVISOR IN THE LIGHT OF THE PRACTICALITY OF DIVIDING THE REMAINDER INTO FRACTIONAL PARTS, BY IDENTIFYING A SITUATION WHERE THE REMAINDER SHOULD NOT BE DIVIDED. 0232

In which situation described below would it NOT make sense to divide the remainder? 1752

a. 5 cupcakes shared by 2 boys
*b. 10 roses shared by 3 girls
c. 24 doughnuts shared by 16 boys

In which situation described below would it NOT make sense to divide the remainder? 1753

a. $21.00 shared by 6 boys
b. 10 cupcakes shared by 3 girls
*c. 16 theater tickets shared by 5 girls

In which situation described below would it NOT make sense to divide the remainder? 1754

a. 12 yds. of material shared by 8 girls
b. 4 bars of candy shared by 3 boys
*c. 50¢ shared by 8 girls

In which situation described below would it NOT make sense to divide the remainder? 1755

*a. 25¢ shared by 3 boys
b. 17 doughnuts shared by 4 boys
c. 5 bars of candy shared by 3 girls

In which situation described below would it NOT make sense to divide the remainder? 1756

a. 15 in. ribbon cut into 2 pieces
*b. 7 marbles divided among 3 boys
c. 16 oz orange juice divided among 5 boys

In which situation described below would it NOT make sense to divide the remainder? 1757

a. 3 packs of gum divided among 3 girls
b. 3 ice cream bars divided between 2 girls
*c. 37 children divided into 2 groups

In which situation described below would it NOT make sense to divide the remainder? 1758

*a. 5 books divided among 4 boys
b. 25 pieces of candy divided among 3 girls
c. 17 cookies divided among 4 boys

In which situation described below would it NOT make sense to divide the remainder? 1759

*a. 12 baseballs divided among 5 boys
b. $15.00 divided among 4 girls
c. 7 candy bars divided among 3 girls

In which situation described below would it NOT make sense to divide the remainder? 1760

a. 21 doughnuts divided among 4 boys
*b. 17 boys divided into 3 teams
c. $17.00 divided among 4 girls

In which situation described below would it NOT make sense to divide the remainder? 1761

a. 3 ice cream bars divided between 2 girls
b. 10 yds. of ribbon divided among 4 girls
*c. 7 baseball bats divided between 2 teams

Source: Harcourt, Brace, Elementary Math. 5, p. 310

THE STUDENT WILL APPLY HIS KNOWLEDGE OF FRACTIONS USED AS REMAINDERS IN DIVISION BY CORRECTLY IDENTIFYING GIVEN QUOTIENTS. [illegible]

Compute the following problem. Circle the correct quotient below. 1762

$24\overline{)1236}$

- a. 51 3/4
- *b. 51 1/2
- c. 51 12/24

Compute the following problem. Circle the correct quotient below. 1763

$40\overline{)1490}$

- a. 37 1/2
- b. 37 10/37
- *c. 37 1/4

Compute the following problem. Circle the correct quotient below. 1764

$16\overline{)1324}$

- a. 82 12/16
- *b. 82 3/4
- c. 82 16/12

Compute the following problem. Circle the correct quotient below. 1765

$45\overline{)1685}$

- *a. 37 4/9
- b. 37 20/45
- c. 37 4/5

Compute the following problem. Circle the correct quotient below. 1766

$54\overline{)3357}$

- a. 62 1/7
- b. 62 9/54
- *c. 62 1/6

Compute the following problem. Circle the correct quotient below. 1767

27)1584

a. 58 27/18
*b. 58 2/3
c. 58 18/27

Compute the following program. Circle the correct quotient below. 1768

25)1220

*a. 48 4/5
b. 48 25/20
c. 48 20/25

Compute the following problem. Circle the correct quotient below. 1769

56)1296

a. 23 1/9
b. 23 8/23
*c. 23 1/7

Compute the following problem. Circle the correct quotient below. 1770

42)1785

a. 42 21/42
*b. 42 1/2
c. 42 1/3

Compute the following problem. Circle the correct quotient below. 1771

72)1332

*a. 18 1/2
b. 18 36/72
c. 18 1/3

Source: Merrill, Discovery Math. 5, p. 222.

THE STUDENT WILL DEMONSTRATE HIS COMPREHENSION OF THE PARTS OF A DIVISION PROBLEM BY IDENTIFYING SPECIFIC PARTS FROM A GIVEN EXAMPLE. 0270

Directions: Circle the correct answer.

1772

$$\begin{array}{r l} 34\overline{)\,640} & \\ \underline{340} & 10 \\ 300 & \\ \underline{272} & \underline{8} \\ 28 & 18 \end{array}$$

The quotient for this example is

a. 28 r 18
*b. 18 r 28
c. 10 r 28

1773

$$\begin{array}{r l} 30\overline{)\,392} & \\ \underline{300} & 10 \\ 92 & \\ \underline{90} & \underline{3} \\ 2 & 13 \end{array}$$

The remainder for this example is

a. 392
b. 13
*c. 2

1774

$$\begin{array}{r l} 25\overline{)\,782} & \\ \underline{750} & 30 \\ 32 & \\ \underline{25} & \underline{1} \\ 7 & 31 \end{array}$$

The dividend for this example is

a. 25
*b. 782
c. 31

```
63)863                                                      1775
   630   10
   233
   189    3
    44   13
```

The divisor for this example is

a. 863
b. 44
*c. 63

```
56)965                                                      1776
   560   10
   405
   392    7
    13   17
```

The remainder in this example is

*a. 13
b. 17
c. 56

```
33)826                                                      1777
   660   20
   166
   165    5
     1   25
```

The quotient in this example is

*a. 25 r 1
b. 1 r 25
c. 33

1778

$$\begin{array}{rr} 42\overline{)720} & \\ \underline{420} & 10 \\ 300 & \\ \underline{294} & \underline{7} \\ 6 & 17 \end{array}$$

The remainder in this example is

a. 7
b. 17
*c. 6

1779

$$\begin{array}{rr} 23\overline{)680} & \\ \underline{46} & 20 \\ 220 & \\ \underline{209} & \underline{9} \\ 13 & 29 \end{array}$$

The divisor in this example is

a. 29
*b. 23
c. 13

1780

$$\begin{array}{rr} 32\overline{)324} & \\ \underline{320} & 10 \\ 4 & \\ \underline{0} & \underline{0} \\ 4 & 10 \end{array}$$

The quotient in this example is

a. 100 r 4
b. 4 r 100
*c. 10 r 4

1781

$$\begin{array}{rr} 22\overline{)888} & \\ \underline{880} & 40 \\ 8 & \\ \underline{0} & \underline{0} \\ 8 & 40 \end{array}$$

The remainder in this example is

a. 22
*b. 8
c. 40

Source: Houghton Mifflin, pp. 250-251.

WHOLE NUMBER MULTIPLICATION AND DIVISION

THE STUDENT WILL ANALYZE AREAS SHOWING DIVISION AS THE INVERSE OF MULTIPLICATION BY CORRECTLY IDENTIFYING NUMBER SENTENCES FROM A LIST. 0201

Study the following division array, and choose the number sentence that describes it. 1782

*a. 18 ÷ 3 = 6
b. 18 ÷ 6 = 3
c. 6 ÷ 3 = 2

0 0 0
0 0 0
0 0 0
0 0 0
0 0 0
0 0 0

Study the following division array, and choose the number sentence that describes it. 1783

a. 4 x 5 = 20
*b. 20 ÷ 4 = 5
c. 20 ÷ 5 = 4

0 0 0 0
0 0 0 0
0 0 0 0
0 0 0 0
0 0 0 0

Study the following division array and choose the number sentence that describes it. 1784

*a. 28 ÷ 7 = 4
b. 28 ÷ 4 = 7
c. 4 x 7 = 28

0 0 0 0 0 0 0
0 0 0 0 0 0 0
0 0 0 0 0 0 0
0 0 0 0 0 0 0

Study the following division array and choose the number sentence that describes it. 1785

a. 3 x 4 = 12
*b. 12 ÷ 4 = 3
c. 12 ÷ 3 = 4

0 0 0 0
0 0 0 0
0 0 0 0

Study the following division array and choose the number sentence that describes it. 1786

a. 15 ÷ 5 = 3
b. 3 x 5 = 15
*c. 15 ÷ 3 = 5

0 0 0
0 0 0
0 0 0
0 0 0
0 0 0

Study the following division array and choose the number sentence that describes it. 1787

*a. 21 ÷ 7 = 3
b. 21 ÷ 3 = 7
c. 3 x 7 = 21

0 0 0 0 0 0 0
0 0 0 0 0 0 0
0 0 0 0 0 0 0

Study the following division array and choose the number sentence that describes it. 1788

*a. 30 ÷ 5 = 6
b. 30 ÷ 6 = 5
c. 5 x 6 = 30

0 0 0 0 0
0 0 0 0 0
0 0 0 0 0
0 0 0 0 0
0 0 0 0 0
0 0 0 0 0

Study the following division array and choose the number sentence that describes it. 1789

a. 2 x 7 = 14
*b. 14 ÷ 2 = 7
c. 14 ÷ 7 = 2

0 0
0 0
0 0
0 0
0 0
0 0
0 0

Study the following division array and choose the number sentence that describes it. 1790

a. 2 x 5 = 10
b. 10 ÷ 5 = 2
*c. 10 ÷ 2 = 5

O O
O O
O O
O O
O O

Circle the statement below which is NOT true. 1791

a. Division is the inverse of multiplication.
b. Division is repeated subtraction.
*c. Division is the opposite of addition.

Source: Merrill, Discovering Math. 5, pg. 37.

THE STUDENT WILL APPLY HIS KNOWLEDGE OF DIVISION AS THE INVERSE OF MULTIPLICATION BY IDENTIFYING SENTENCES RELATED TO A GIVEN DIVISION SENTENCE. 0202

Circle the number sentence below which is related to the following sentence: 56 ÷ 8 = 7. 1792

a. 56 x 1 = 56
b. 2 x 28 = 56
*c. 8 x 7 = 56

Circle the number sentence below which is related to the division sentence 54 ÷ 9 = 6. 1793

a. 27 x 2 = 54
*b. 9 x 6 = 54
c. 3 x 18 = 54

Circle the number sentence below which is related to the division sentence 63 ÷ 9 = 7. 1794

a. 3 x 21 = 63
b. 21 x 3 = 63
*c. 9 x 7 = 63

Circle the number sentence below which is related to the division sentence 24 ÷ 6 = 4. 1795

*a. 6 x 4 = 24
b. 3 x 8 = 24
c. 2 x 12 = 24

Circle the number sentence below which is related to the division sentence 40 ÷ 5 = 8. 1796

a. 2 x 20 = 40
b. 4 x 10 = 40
*c. 5 x 8 = 40

Circle the number sentence below which is related to the division sentence 48 ÷ 8 = 6. 1797

a. 4 x 12 = 48
*b. 6 x 8 = 48
c. 2 x 24 = 48

Circle the number sentence below which is related to the division sentence 32 ÷ 4 = 8. 1798

*a. 8 x 4 = 32
b. 2 x 16 = 32
c. 1 x 32 = 32

Circle the number sentence below which is related to the division sentence 72 ÷ 9 = 8. 1799

a. 4 x 18 = 72
*b. 9 x 8 = 72
c. 3 x 24 = 72

Circle the number sentence below which is related to the division sentence 36 ÷ 4 = 9. 1800

a. 12 x 3 = 36
b. 6 x 6 = 36
*c. 9 x 4 = 36

Circle the number sentence below which is related to the division sentence 45 ÷ 5 = 9. 1801

a. 3 x 15 = 45
b. 1 x 45 = 45
*c. 9 x 5 = 45

Source: Merrill, Discovering Math. 5, pg. 76.

THE STUDENT WILL APPLY HIS KNOWLEDGE THAT MULTIPLICATION IS THE INVERSE OF DIVISION BY COMPUTING DIVISION PROBLEMS USING ZERO. 0136

Directions: Solve the following division problems to find n. Apply your knowledge that multiplication is the inverse of division.

9 ÷ 0 = n 1802

a. any whole number
b. 1
*c. 0
d. no solution

5 ÷ 0 = n 1803

a. any whole number
b. 5
c. 0
*d. no solution

0 ÷ 5 = n 1804

a. any whole number
*b. 0
c. 5
d. no solution

THE STUDENT WILL VIEW THE RELATIONSHIP BETWEEN MULTIPLICATION AND DIVISION BY IDENTIFYING THE CORRECTLY FORMULATED EQUATION. 0219

If 4 x 9 = 36, and 36 ÷ 9 = 4, then 36 ÷ 4 = 1805

a. 4
*b. 9
c. 36

If 6 x 3 = 18, and 18 ÷ 3 = 6, then 18 ÷ 6 = 1806

*a. 3
b. 6
c. 18

If 3 x 5 = 15, and 15 ÷ 3 = 5, then 15 ÷ 5 = 1807

a. 5
*b. 3
c. 15

If 6 x 4 = 24, and 24 ÷ 6 = 4, then 24 ÷ 4 = 1808

*a. 6
b. 4
c. 24

If 8 x 6 = 48, and 48 ÷ 6 = 8, then 48 ÷ 8 = 1809

a. 8
b. 48
*c. 6

If 5 x 4 = 20, and 20 ÷ 4 = 5, then 20 ÷ 5 = 1810

*a. 4
b. 5
c. 20

If 9 x 7 = 63, and 63 ÷ 7 = 9, then 63 ÷ 9 is 1811

a. 9
b. 63
*c. 7

If 9 x 6 = 54, and 54 ÷ 9 = 6, then 54 ÷ 6 = 1812

a. 6
*b. 9
c. 54

If 7 x 3 = 21, and 21 ÷ 7 = 3, then 21 ÷ 3 = 1813

a. 3
b. 21
*c. 7

If 5 x 8 = 40, and 40 ÷ 5 = 8, then 40 ÷ 8 = 1814

*a. 5
b. 40
c. 8

Source: Discovering Math. 5, Merrill, p. 76.

THE STUDENT WILL VIEW THE RELATIONSHIP BETWEEN MULTIPLICATION AND DIVISION WITH TWO-PLACE FACTORS, BY IDENTIFYING THE CORRECTLY FORMULATED QUOTIENT. 0228

If 40 x 80 = 3200, then 3200 ÷ 80 = 1815

a. 4
b. 400
*c. 40

If 80 x 60 = 4800, then 4800 ÷ 60 = 1816

*a. 80
b. 8
c. 800

If 90 x 90 = 8100, then 8100 ÷ 90 = 1817

a. 9
*b. 90
c. 900

If 90 x 50 = 4500, then 45 ÷ 50 = 1818

a. 500
*b. 90
c. 9

If 70 x 70 = 4900, then 4900 ÷ 70 = 1819

a. 700
b. 7
*c. 70

If 32 x 81 = 2592, then 2592 ÷ 81 = 1820

a. 3200
b. 320
*c. 32

If 26 x 53 = 1378, then 1378 ÷ 26 = 1821

*a. 53
b. 260
c. 26

If 82 x 63 = 5166, then 5166 ÷ 82 = 1822

*a. 63
b. 820
c. 630

If 54 x 31 = 1674, then 1674 ÷ 31 = 1823

a. 450
*b. 54
c. 310

If 76 x 41 = 3116, then 3116 ÷ 76 = 1824

a. 410
*b. 41
c. 316

Source: Merrill, Discovering Math. 5, pp. 97 & 99.

THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF DIVISION AND MULTIPLICATION BY DETERMINING WHICH PROCESS TO USE IN THE SOLVING OF PROBLEMS. 0234

Jerry paid 60¢ for a box of candy bars. There are 12 bars in the box. How can you find out how much each bar cost him? 1825

a. multiply
*b. divide
c. multiply and divide

Racing cars sell for 25¢ for 2 cars. How can you find out how much 6 racing cars will cost? 1826

a. add
b. multiply
*c. divide and multiply

Oranges sell for 10¢ for 3 oranges. How can you find out how much 1 1/2 doz. oranges will cost? 1827

*a. divide and multiply
b. multiply
c. divide

Jean saves 40¢ a week. How can you find out how many weeks it will take her to save 2 dollars? 1828

a. multiply
*b. divide
c. multiply and divide

George has 15 problems to solve for homework. It has taken him 8 minutes to do five of them. How can you find out how many more minutes it will take George to finish solving the problems? 1829

a. divide
b. multiply
*c. divide and multiply

Whistles cost 96¢ a dozen. How can you find out how much the hiking club will have to pay for 21 whistles? 1830

*a. divide and multiply
b. divide
c. multiply

Twenty-one girl scouts plan to sell 384 boxes of cookies. The scout leader wishes to give each girl the same number of boxes to sell. How can you find out how many boxes she should give each girl? 1831

a. multiply
*b. divide
c. multiply and divide

A candy bar costs 6¢. How much will 5 candy bars cost? 1832

*a. multiply
b. multiply and divide
c. divide

On a jet plane there are 5 seats in each row. How can you find out how many passengers are on board if 9 rows are filled? 1833

a. divide
b. divide and multiply
*c. multiply

If John knows that there are 52 weeks in a year, how can he find out how many years 988 weeks make? 1834

a. multiply
*b. divide
c. multiply and divide

Source: Harcourt, Brace, Elementary Math. 4, pp. 145, 223.

THE STUDENT WILL APPLY HIS KNOWLEDGE OF MULTIPLICATION AND DIVISION BY CORRECTLY IDENTIFYING THE ANSWER TO A GIVEN PROBLEM, USING ONE OF THE TWO PROCESSES. 0235

Mr. Jones planted a new orchard. He planted 7 trees in each row. had 3 rows of peach trees and 4 rows of apricot trees. How many trees did he plant in all? 1835

a. 21
b. 28
*c. 49

John had a collection of 336 coins. He put 6 coins in each row in his coin book. How many rows of coins did John have? 1836

*a. 56
b. 2016
c. 51

Mark works as a stock boy at the supermarket. One day, he unpacked boxes of cereal from a carton. It contained 3 layers of boxes, and each layer was 6 boxes wide and 3 boxes high. How many boxes were in the carton? 1837

a. 18
*b. 54
c. 6

Mrs. Lane pays Ralph $2.75 to mow her lawn. If he mows the lawn 15 times during the summer, how much will he make from his job? 1838

a. $19.00
b. $20.50
*c. $41.25

On her birthday, Judy took six guests bowling. Her mother paid $5.95 for the bowling party. What was the cost for each of the seven girls? 1839

*a. $.85
b. $.99
c. $3.57

Paul delivers packages for the drugstore. Last month he worked 24 days and made an average of 18 deliveries each day. How many deliveries did he make in all? 1840

*a. 432
b. 1 1/3
c. 108

The pupils in the 5th grade gave an operetta. The director said that the cast had rehearsed 405 minutes in all. If 9 rehearsals were held, what was the average time of each rehearsal? 1841

a. 81 minutes
*b. 45 minutes
c. 48 minutes

The operetta was given 3 times. In all, 762 people saw the performances. About how many people saw each performance? 1842

*a. 254
b. 330
c. 231

Mr. Stevens had 864 bottles of soft drinks in cases on his truck. If each case held 24 bottles, how many cases were on the truck? 1843

a. 35
b. 72
*c. 36

One month Bob sold 21 chickens. He received $19.74 for them. On the average, how much was this for each chicken? 1844

*a. $.94
b. $.93
c. $1.94

Source: Merrill, Discovering Math. 5, pp. 86, 107, 223

THE STUDENT WILL ANALYZE A PROBLEM INVOLVING MULTIPLICATION OR DIVISION BY CORRECTLY IDENTIFYING INFORMATION UNNECESSARY TO THE SOLVING OF THE PROBLEM. 0236

An ocean liner 209 feet long averages about 34 miles per hour. About how many hours would it take this ship to travel 2924 miles? The unnecessary figure in this problem is 1845

*a. 209
b. 2924
c. 34

An express train weighing 340 tons averages about 73 miles per hour. About how long would a 1387 mile trip take? The unnecessary figure in this problem is 1846

a. 1387 miles
b. 73 miles
*c. 340 tons

If a 1970 Buick travels 705 miles at an average speed of 47 miles per hour, how long would this take? The unnecessary information in this problem is 1847

a. 47 miles
b. 705 miles
*c. 1970 Buick

A man drove 385 miles at a speed of 55 miles per hour and 300 miles at a speed of 60 miles per hour, on a 65 mile per hour highway. How far did the man drive? What figure is unnecessary? 1848

a. 60 mph
*b. 65 mph
c. 55 mph

If a jet plane carrying 98 passengers flies 2528 miles in 4 hours, how fast is it traveling? What is the unnecessary figure in this problem? 1849

*a. 98
b. 4
c. 2528

If a jet plane carried 98 passengers on each flight how many flights would it take to transport 3430 passengers a distance of 2573 miles? What is the unnecessary figure in this problem? 1850

*a. 2573
b. 3430
c. 98

Mr. Jones used 8 gallons of gasoline to go 216 miles at 60 miles per hour. How many miles did he travel on one gallon of gas? What is the unnecessary figure in this problem? 1851

a. 216
*b. 60
c. 8

A classroom containing 33 desks measures 17 feet by 13 ft. by 9 ft. How many cubic feet of air does the room contain? What figure is unnecessary in this problem? 1852

a. 17
*b. 33
c. 13
d. 9

One week Peter worked 5 hours and 15 minutes in Mr. Ramon's garden, which measures 16 ft. by 20 ft. Mr. Ramon agreed to pay him 40¢ an hour. How much should he pay Peter for the week's work? What is the unnecessary figure in this problem? 1853

a. 40¢
b. 5 hrs. 15 min.
c. 16 ft.
*d. 16 ft. by 20 ft.

Mrs. Bunch drove 14 miles in 15 min. at a rate of 60 miles per hour. At that rate, how far could she drive in 1 1/2 hours? What is the unnecessary figure in this problem? 1854

*a. 60 mph
b. 15 min.
c. 14 miles
d. 1 1/2 hrs.

Source: Addison-Wesley, Elementary School Math. 5, pp. 132-133
Harcourt, Brace, Elementary Math. 5, p. 223.

THE STUDENT WILL DEMONSTRATE HIS COMPREHENSION THAT DIVISION IS THE INVERSE OPERATION OF MULTIPLICATION BY IDENTIFYING THE CORRESPONDING MULTIPLICATION EQUATION WITH A GIVEN DIVISION EQUATION. 0271

Directions: Match column I with column II.

Column I

a. 54 ÷ 9 = 6
b. 56 ÷ 7 = 8
c. 49 ÷ 7 = 7
d. 18 ÷ 6 = 3
e. $\overset{9}{9\overline{)81}}$
f. $\overset{9}{7\overline{)63}}$
g. $\overset{8}{9\overline{)72}}$
h. $\overset{4}{8\overline{)32}}$
i. 42 ÷ 6 = 7
j. 20 ÷ 4 = 5
k. 64 ÷ 8 = 8
l. 28 ÷ 7 = 4
m. $\overset{5}{3\overline{)15}}$
n. $\overset{8}{5\overline{)40}}$
o. $\overset{9}{3\overline{)27}}$

Column II

f 7 x 9 = 63 1855
s 9 x 2 = 18 1856
h 4 x 8 = 32 1857
t 6 x 8 = 48 1858
o 9 x 3 = 27 1859
l 4 x 7 = 28 1860
e 9 x 9 = 81 1861
m 3 x 5 = 15 1862
k 8 x 8 = 64 1863
c 7 x 7 = 49 1864
p 3 x 4 = 12 1865
q 3 x 8 = 24 1866

p. $\overset{3}{4\overline{)12}}$

q. $24 \div 3 = 8$

r. $36 \div 6 = 6$

s. $18 \div 9 = 2$

t. $48 \div 6 = 8$

b $7 \times 8 = 56$ 1867

r $6 \times 6 = 36$ 1868

a $9 \times 6 = 54$ 1869

n $8 \times 5 = 40$ 1870

d $6 \times 3 = 18$ 1871

g $9 \times 8 = 72$ 1872

i $6 \times 7 = 42$ 1873

Source: Houghton Mifflin, p. 108.

MULTIPLICATION OF FRACTIONS

GIVEN A LIST OF INCOMPLETE STATEMENTS THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF THE MULTIPLICATION OF FRACTIONS TO CHOOSE THE TERMS WHICH WOULD CORRECTLY FILL IN THE BLANKS. 0175

Directions: Circle the letter in front of the terms which fill in the blanks.

In multiplying fractions multiply the numerator times _____ and the denominator times the _________. 1874

a. numerator, product
b. denominator, numerator
*c. numerator, denominator
d. product, numerator

To reduce fractions _______ the numerator and the denominator by _________. 1875

*a. divide, a number equal to one
b. multiply, a number equal to one
c. divide, a number smaller than one
d. multiply, a number smaller than one

If the product of an equation is an improper fraction the _______ may be divided by the _________. 1876

a. denominator, numerator.
b. denominator, denominator
*c. numerator, denominator
d. numerator, numerator

An easier way to multiply fractions with large number is to ____ in the equation and then _________. 1877

a. divide, multiply
b. multiply, reduce
c. multiply, divide
*d. reduce, multiply

If the product has a numerator greater than the denominator we know that the product ________. 1878

a. can be divided by an even number
*b. is greater than one
c. is less than one
d. can be divided by an odd number

If we change the order of the factors to multiply fractions we have used the ________. 1879

a. ones principle
b. zero principle
*c. commutative principle
d. associative principle

In the multiplication of two factions if the first factor is less than one the product will be ______. 1880

*a. less than the second factor
b. greater than the second factor
c. less than one
d. greater than one

The product of an equation is said to be in its best form when _____. 1881

a. the numerator is smaller than the denominator.
b. the denominator is smaller than the numerator.
c. it has been changed to a mixed number.
*c. it has been reduced to lowest terms.

To change a mixed number to an improper fraction, _______ the whole number by the _______ of the fraction and ________ the _______ of the fraction. 1882

a. add; denominator; multiply; numerator
*b. multiply; denominator; add; numerator
c. add; numerator; multiply; denominator
d. multiply; numerator; add; denominator

If we multiply a fraction by a fraction which is equal to one we 188[illegible]
have changed the ______ but not the ______ of the fraction.

*a. form; value
b. value; form
c. order; value
d. order; form

THE STUDENT WILL APPLY HIS UNDERSTANDING OF THE PRINCIPLES OF MULTIPLICATION OF FRACTIONS BY SELECTING A FACTOR THAT WOULD MAKE AN EQUATION APPLICABLE TO A GIVEN ASSUMPTION. 0187

Directions: Select the fraction that would apply to the given assumption.

The product is greater than the first factor. 1884
3/4 x ______ =

a. 6/8
*b. 4/3
c. 4/4
d. 6/7

The product is equal to the first factor. 1885
8/9 x ______ =

a. 3/4
b. 6/8
*c. 7/7
d. 9/8

The product is less than the second factor. 1886
______ x 11/12 =

a. 9/8
b. 7/6
c. 5/5
*d. 3/4

The product is equal to the second factor. 1887

_______ x 7/8 =

a. 3/2
b. 8/9
c. 3/4
*d. 6/6

The product is less than the first factor. 1888

4/5 x _______ =

*a. 4/5
b. 3/2
c. 8/7
d. 2/2

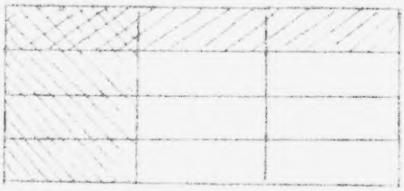
The product is greater than the second factor. 1889

_______ x 6/7 =

a. 2/3
b. 4/4
*c. 12/6
d. 3/4

THE STUDENT WILL ANALYZE REGIONS DEMONSTRATING THE MULTIPLICATION OF FRACTIONS BY IDENTIFYING THE CORRECT EQUATION. 0237

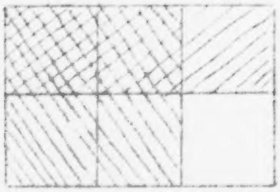
Study this region carefully. 1890



The region above shows

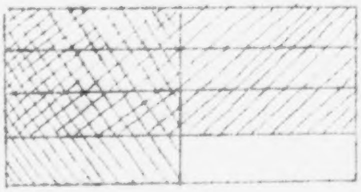
a. 1/3 of 1/4 = 1/2
*b. 1/4 of 1/3 = 1/12
c. 3/4 x 1/3 = 1/12

Study this region carefully. It shows 1891



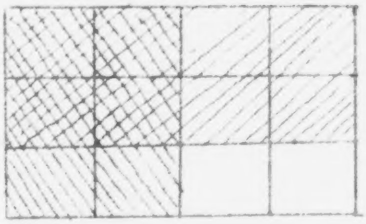
*a. 1/2 of 2/3 = 2/6
b. 2/3 of 1/2 = 2/6
c. 2/6 of 6 = 1

Study this region carefully. It shows 1892



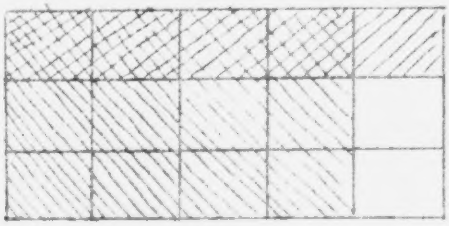
a. 1/2 of 3/8 = 1/8
b. 3/4 of 1/2 = 1/8
*c. 3/4 x 1/2 = 3/8

Study this region carefully. It shows 1893



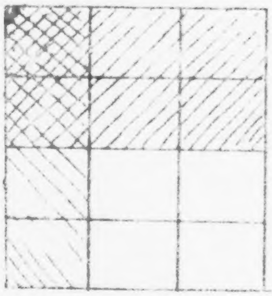
*a. 2/3 x 2/4 = 4/12
b. 2/4 x 2/3 = 2/12
c. 2/3 x 2/4 = 2/12

Study this region carefully. It shows 1894



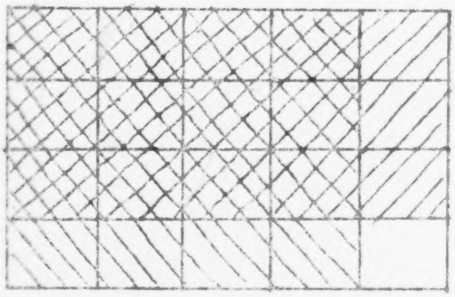
a. 4/5 x 1/3 = 2/15
b. 1/3 x 4/5 = 2/15
*c. 1/3 x 4/5 = 4/15

Study this region carefully. It shows 1895



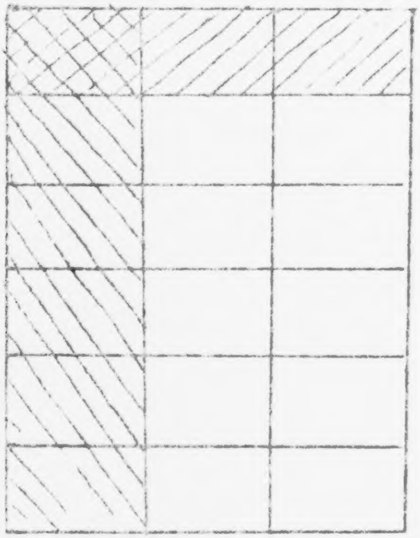
*a. 2/4 x 1/3 = 2/12
b. 1/3 x 2/4 = 4/12
c. 2/4 x 1/3 = 12/12

Study this region carefully. It shows 1896



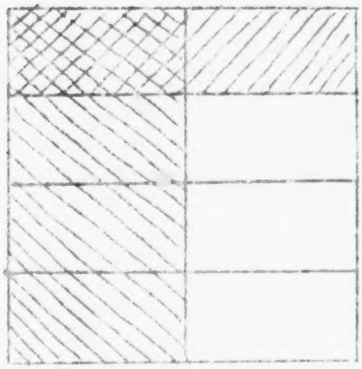
a. 3/4 x 4/5 = 1/20
*b. 3/4 x 4/5 = 12/20
c. 4/5 x 3/4 = 1/20

Study this region carefully. It shows 1897



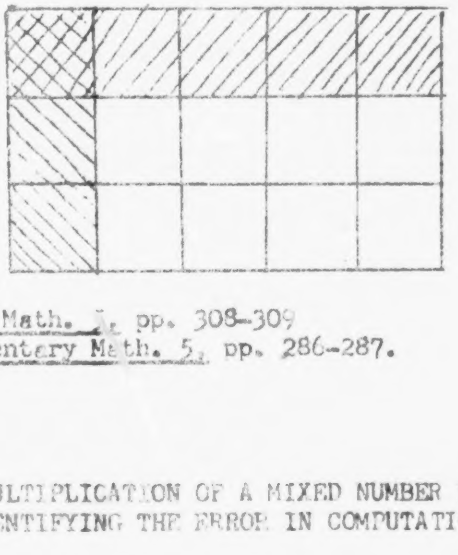
*a. 1/3 x 1/6 = 10/18
b. 1/6 x 1/3 = 10/18
c. 1/6 x 1/3 = 1/18

Study this region carefully. It shows 1898



a. 1/4 x 1/2 = 3/8
*b. 1/2 x 1/4 = 1/8
c. 1/2 x 1/4 = 3/8

Study this region carefully. It shows 1899



a. 1/3 x 1/5 = 7/15
b. 1/5 x 1/3 = 8/15
*c. 1/3 x 1/5 = 1/15

Source: Merrill, Discovering Math. 5, pp. 308-309
Addison-Wesley, Elementary Math. 5, pp. 286-287.

THE STUDENT WILL ANALYZE THE MULTIPLICATION OF A MIXED NUMBER BY A WHOLE NUMBER OPERATION BY IDENTIFYING THE ERROR IN COMPUTATION. 0246

Carefully examine the equation below. Circle the ERROR you find. 1900

5x (2 + 3/4) = N
(5 x 2) + (2 x 3/4) = N

a. 5 x 2
b. 2 + 3/4
*c. 2 x 3/4

Carefully examine the problem below. Circle the ERROR you find. 1901

3 2/3
x5
15
3 1/3
18

*a. 18
b. 15
c. 3 1/3

Carefully examine the equation below. Circle the ERROR you find. 1902

7 x 3 1/2 = N
(7 x 3) + (7 x 1/2) = N
21 + 7/2 = N

*a. 7/2
b. 21
c. 7 x 1/2

Carefully examine the equation below. Circle the ERROR you find. 1903

2 2/3 x 5 = N
(2 x 5) + (2/3 x 5) = N
7 + 3 1/3 = N

a. 3 1/3
b. 2/3 x 5
*c. 7

Carefully examine the problem below. Circle the ERROR you find. 1904

8 3/4
x6
48
6
54

*a. 6
b. 48
c. 54

Carefully examine the problem below. Circle the ERROR you find. 1905

3 4/7
x7
21
49
70

a. 21
*b. 49
c. 70

Carefully examine the equation below. Circle the ERROR you find. 1906

2 x 5 3/4 = N
(2 x 5) + (2 x 3/4) = N
10 + 2 1/2 = N
12 1/2 = N

*a. 2 1/2
b. 10
c. 2 x 5

Carefully examine the equation below. Circle the ERROR you find. 1907

4 x 2 3/5 = N
(4 x 2) + (4 x 3/5) = N
8 + 2 2/5 = 16 2/5

a. 2 2/5
*b. 16 2/5
c. 4 x 3/5

Carefully examine the problem below. Circle the ERROR you find. 1908

2 1/4
x9
18
2 1/2
20 1/2

a. 18
*b. 2 1/2
c. 20 1/2

Carefully examine the problem below. Circle the ERROR you find. 1909

$$\begin{array}{l} 15 \\ \underline{\times\ 3\ 4/5} \\ 45 \\ \underline{20} \\ 55 \end{array}$$

*a. 55
b. 45
c. 20

Source: Merrill, Discovering Math. 5, p. 315.

THE STUDENT WILL APPLY HIS KNOWLEDGE OF MULTIPLYING A MIXED NUMBER BY A MIXED NUMBER BY IDENTIFYING THE CORRECT PRODUCT. 0247

Compute the problem on paper. Circle the correct product. 1910

2 1/2 x 3 2/3 = N

*a. 9 1/6
b. 11
c. 7

Compute the problem on paper. Circle the correct product. 1911

2 1/4 x 2 1/3 = N

a. 9
b. 8 1/2
*c. 5 1/4

Compute the problem on paper. Circle the correct product. 1912

3 1/2 x 1 1/7 = N

*a. 4
b. 9
c. 7 5/7

Compute the problem on paper. Circle the correct product. 1913

5 2/3 x 3 3/5 = N

a. 39 1/2
*b. 20 2/5
c. 38 1/4

Compute the problem on paper. Circle the correct product. 1914

8 3/4 x 3 1/5 = N

a. 28 1/10
b. 24 3/10
*c. 28

Compute the problem on paper. Circle the correct product. 1915

3 3/7 x 4 2/3 = N

*a. 16
b. 28
c. 33 3/5

Compute the problem on paper. Circle the correct product. 1916

2 4/7 x 4 2/3 = N

a. 9
*b. 12
c. 4 2/7

Compute the problem on paper. Circle the correct product. 1917

4 1/6 x 4 4/5 = N

a. 4 1/15
b. 16 2/3
*c. 20

Compute the problem on paper. Circle the correct product. 1918

3 3/8 x 3 5/9 = N

- *a. 12
- b. 31
- c. 9 1/12

Compute the problem on paper. Circle the correct product. 1919

5 1/6 x 2 2/5

- a. 4 1/15
- b. 3 1/10
- *c. 12 2/5

Source: Merrill, Discovering Math. 5, p. 316.

THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF THE MULTIPLICATION OF FRACTIONAL NUMBERS BY CORRECTLY IDENTIFYING THE PRODUCT IN GIVEN EQUATIONS. 0252

$\frac{3}{4} X \frac{5}{9} = \frac{3 X 5}{4 X 9}$ = N. "N" is 1920

- a. $\frac{8}{36}$
- *b. $\frac{15}{36}$
- c. $\frac{8}{12}$

$\frac{5}{6} X \frac{3}{4} = \frac{5 X 3}{6 x 4}$ = N. "N" is 1921

- *a. $\frac{15}{24}$
- b. $\frac{8}{24}$
- c. $\frac{8}{10}$

$\frac{2}{3} \times \frac{3}{5} = \frac{2 \times 3}{3 \times 5} = N.$ "N" is 1922

a. $\frac{6}{8}$
b. $\frac{5}{8}$
*c. $\frac{6}{15}$

$\frac{5}{9} \times \frac{3}{10} = \frac{5 \times 3}{9 \times 10} = N.$ "N" is 1923

*a. $\frac{15}{90}$
b. $\frac{8}{90}$
c. $\frac{8}{19}$

$\frac{3}{8} \times \frac{1}{6} = \frac{3 \times 1}{8 \times 6} = N.$ "N" is 1924

a. $\frac{3}{14}$
b. $\frac{1}{48}$
*c. $\frac{3}{48}$

$\frac{1}{9} \times \frac{6}{7} = \frac{1 \times 6}{9 \times 7} = N.$ "N" is 1925

*a. $\frac{6}{63}$
b. $\frac{6}{16}$
c. $\frac{1}{63}$

$\frac{7}{10} \times \frac{3}{5} = \frac{7 \times 3}{10 \times 5} = N.$ "N" is 1926

*a. $\frac{21}{50}$
b. $\frac{10}{15}$
c. $\frac{10}{50}$

$\frac{3}{2} \times \frac{1}{6} = \frac{3 \times 1}{2 \times 6} = N.$ "N" is 1927

a. $\frac{1}{8}$
b. $\frac{1}{12}$
*c. $\frac{3}{12}$

$\frac{5}{8} \times \frac{2}{3} = \frac{5 \times 2}{8 \times 3} = N.$ "N" is 1928

a. $\frac{7}{24}$
*b. $\frac{10}{24}$
c. $\frac{7}{11}$

$\frac{5}{3} \times \frac{4}{5} = \frac{5 \times 4}{3 \times 5} = N.$ "N" is 1929

*a. $\frac{20}{15}$
b. $\frac{9}{15}$
c. $\frac{20}{8}$

Source: Harcourt, Brace, Elementary Math. 5, p. 298.

THE STUDENT WILL APPLY HIS KNOWLEDGE OF THE MULTIPLICATION OF FRACTIONS BY IDENTIFYING THE CORRECT PRODUCT OF TWO RATIONAL FACTORS. 0253

In the fraction $\frac{2}{3} \times \frac{1}{4} = N$, "N" is NOT 1930

a. $\frac{2}{12}$
*b. $\frac{2}{7}$
c. $\frac{1}{6}$

In the fraction $\frac{5}{6} \times \frac{3}{4} = N$, "N" is NOT 1931

*a. $\frac{8}{24}$
b. $\frac{15}{24}$
c. $\frac{5}{8}$

In the fraction $\frac{2}{5} \times \frac{3}{4} = N$, "N" is NOT 1932

a. $\frac{6}{20}$
*b. $\frac{5}{20}$
c. $\frac{3}{10}$

In the fraction $\frac{5}{9} \times \frac{6}{7} = N$, "N" is NOT 1933

a. $\frac{30}{63}$
b. $\frac{10}{21}$
*c. $\frac{11}{63}$

In the fraction $\frac{3}{4} \times \frac{2}{3} = N$, "N" is NOT 1934

*a. $\frac{5}{12}$
b. $\frac{1}{2}$
c. $\frac{6}{12}$

In the fraction $\frac{3}{4} \times \frac{2}{5} = N$, "N" is NOT 1935

a. $\frac{3}{10}$
b. $\frac{6}{20}$
*c. $\frac{5}{20}$

In the fraction $\frac{4}{5} \times \frac{1}{4} = N$, "N" is NOT 1936

a. $\frac{4}{20}$
*b. $\frac{4}{9}$
c. $\frac{1}{5}$

In the fraction $\frac{1}{8} \times \frac{2}{3} = N$, "N" is NOT 1937

a. $\frac{1}{12}$
b. $\frac{2}{24}$
*c. $\frac{2}{11}$

In the fraction $\frac{5}{9} \times \frac{3}{10} = N$, "N" is NOT 1938

a. $\frac{1}{6}$
*b. $\frac{8}{90}$
c. $\frac{15}{90}$

In the fraction $\frac{3}{8} \times \frac{1}{6} = N$, "N" is NOT 1939

*a. $\frac{3}{14}$
b. $\frac{1}{16}$
c. $\frac{3}{48}$

Source: Merrill, Discovering Math. 5, p. 309

MULTIPLICATION AND DIVISION OF FRACTIONS

THE STUDENT WILL VIEW THE RELATIONSHIP BETWEEN MULTIPLICATION OF FRACTIONS AND DIVISION OF FRACTIONS BY IDENTIFYING THE CORRECTLY FORMULATED EQUATION. 0249

If 1/2 x 1/4 = 1/8, then 1/8 ÷ 1/4 = N 1940

a. 1/8
b. 1/4
*c. 1/2

If 1/2 x 1/4 = 1/8, then 1/8 ÷ 1/2 = 1941

a. 1/8
b. 1/2
*c. 1/4

If 3/8 x 2/3 = 6/24, then 6/24 ÷ 2/3 = 1942

*a. 3/8
b. 2/3
c. 6/24

If 1/8 x 5/6 = 5/48, then 5/48 ÷ 1/8 = 1943

a. 1/8
b. 1/48
*c. 5/6

If 7/10 x 1/2 = 7/20, then 7/20 ÷ 1/2 = 1944

a. 1/2
*b. 7/10
c. 1/20

If 1/10 x 3/4 = 3/40, then 3/40 ÷ 1/10 = 1945

a. 1/10
b. 1/40
*c. 3/4

If 7/12 x 1/3 = 7/36, then 7/36 ÷ 1/3 = 1946

*a. [illegible]
b. [illegible]
c. [illegible]

If 5/8 x 4/7 = 20/56, then 20/56 ÷ 5/8 = 1947

a. 10/5
b. 1/8
*c. 4/7

If 3/4 x 2/3 = 6/12, then 6/12 ÷ 2/3 = 1948

a. 1/2
*b. 3/4
c. 2/3

If 3/5 x 1/2 = 3/10, then 3/10 ÷ 1/2 = 1949

a. 1/5
b. 1/2
*c. 3/5

Source: Addison-Wesley, Elementary School Math. 5, p. 294

THE STUDENT WILL APPLY HIS KNOWLEDGE OF DIVISION AS THE INVERSE OF MULTIPLICATION TO AID HIM IN DIVIDING A FRACTION BY A FRACTION, BY IDENTIFYING THE CORRECT QUOTIENT. 0250

Directions: Remember that 9/16 ÷ 3/4 = $\frac{\triangle}{\square}$ x 3/4 = 9/16. Keeping this in mind, identify the correct quotient for the following division problems.

4/12 ÷ 2/3 = N. "N" is 1950

a. 8/4
b. 2/6
*c. 2/4

9/18 ÷ 3/9 = N. "N" is 1951

a. 3/8
*b. 3/2
c. 27/3

54/100 ÷ 6/10 = N. "N" is 1952

a. 7/10
b. 5/10
*c. 9/10

72/4 ÷ 12/2 = N. "N" is 1953

a. 8/2
*b. 6/2
c. 6/8

60/33 ÷ 6/3 = N. "N" is 1954

*a. 10/11
b. 12/11
c. 10/33

15/54 ÷ 5/6 = N. "N" is 1955

*a. 3/9
b. 5/6
c. 3/6

100/46 ÷ 10/2 = N. "N" is 1956

a. 90/46
b. 90/23
*c. 10/23

56/60 ÷ 28/15 = N. "N" is 1957

a. 3/4
*b. 2/4
c. 2/6

49/35 ÷ 7/7 = N. "N" is 1958

*a. 7/5
b. 7/35
c. 49/7

45/15 ÷ 9/3 = N. "N" is 1959

a. 4/3
b. 9/15
*c. 5/5

Source: SRA Greater Cleveland Math. Program 5, p. 67.

PERCENT

GIVEN A CHART THE STUDENT WILL APPLY HIS KNOWLEDGE OF FINDING PERCENT BY SOLVING SUCH PROBLEMS. 0184

Directions: Use the information on the chart to compute the percentage. Circle the correct answer.

	Salary	Food	Saves	Miscellaneous
Jane	$50	$10	$20	$20
Sally	$45	$10	$20	$15
Mark	$55	$15	$30	$10
Tom	$40	$8	$20	$12

What percent does Jane save? 1960

a. 50
b. 30
c. 25
*d. 40

What percent does Tom save? 1961

*a. 50
b. 30
c. 25
d. 40

What percent does Mark spend on food? 1962

a. 17 2/3
*b. 27 3/11
c. 25 17/55
d. 30 11/12

What percent does Sally spend on miscellaneous? 1963

*a. 33 1/3
b. 16 2/3
c. 45
d. 50

What percent does Jane spend on food? 1964

a. 30
b. 25
*c. 20
d. 45

What percent does Mark save? 1965

*a. 54 6/11
b. 17 2/3
c. 30 3/13
d. 18 2/11

What percent does Sally spend on food? 1966

a. 33 1/3
b. 44 3/4
c. 16 1/2
*d. 22 2/9

What percent does Tom save? 1967

a. 12 1/2
b. 40
*c. 50
d. 16 2/3

Sally's salary is what percent of Jane's? 1968

a. 60%
b. 75%
c. 80%
*d. 90%

Tom's salary is what percent of Mark's? 1969

a. 66 2/3
b. 87 1/2
c. 74 8/11
*d. 72 8/11

GIVEN SEVERAL WORD PROBLEMS THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF WRITING AN EQUATION TO SOLVE PERCENT PROBLEMS BY CHOOSING AN APPLICABLE EQUATION FROM A LIST. 0180

Directions: Choose an equation that would apply to the word problem.

25% of what number is 8. 1970

a. N x 8 = 25%
b. 8 = 25% ÷ N
c. 8 = N ÷ 25%
*d. 25 x N = 8

What percent of 25 is 5? 1971

a. N x 5 = 25
*b. 5 = 25 x N
c. n = 25 ÷ 5
d. N x 5 = 25

10% of what number is 15? 1972

*a. 10% x N = 15
b. N x 15 = 10%
c. 10% x 15 = N
d. 15 ÷ N = 10%

7 1/2 is 50% of what number? 1973

a. N = 50% + 7 1/2
*b. 7 1/2 = 50% x N
c. 50% x 7 1/2 = N
d. 50% + 7 1/2 = 7 1/2

6 is what percent of 16? 1974

a. N + 6 = 16
b. 16 = N x 6
*c. 6 = N x 16
d. 16 + 6 = N

Kay had $20. She spent $2.50. What percent of her money did she spend? 1975

a. $20 + $2.50 = N
b. N + $2.50 = $20.00
c. $2.50 x $20.00 = N
*d. $20.00 x N = $2.50

Jane bought a mini skirt. It was on sale for $9. She received a 25% discount. What was the original price? 1976

a. N = 9 x 25%
b. 25% = 9 x N
*c. 25% x N = $9
d. 9 x 25% = N

John lost 5 marbles. He now has 80% of his original number. How many did he have before he lost any? 1977

*a. 5 = 80% x N
b. N = 80% x 5
c. 80% = 5 x N
d. 80% = N ÷ 5

Source: Addison-Wesley.

ARITHMETIC APPLICATIONS

APPLICATIONS OF WHOLE NUMBERS

THE STUDENT WILL ANALYZE NUMERICAL EQUATIONS BY SELECTING THE SIGN THAT WILL NOT WORK IN A GIVEN EQUATION. 0124

Directions: Given an incomplete equation choose the sign that would not make it true.

X _____ 5 = 15, if X is larger than 5: 1980

a. +
b. −
*c. X
d. ÷

y _____ 1 = 6, if y is 6 or larger: 1981

*a. +
b. −
c. x
d. ÷

27 _____ 3 = Z, if Z is less than 27: 1982

*a. +
b. −
c. x
d. ÷

150 _____ 10 = S, if S is more than a two digit number: 1983

a. +
b. −
c. x
*d. ÷

49 _____t = 7, if t is a positive number. 1984

*a. +
b. -
c. x
d. ÷

1000 _____ 10 = r, if r uses only the digits 0 and 1 1985

a. +
*b. -
c. x
d. ÷

n---n = r, if r is not a place holder. 1986

a. +
*b. -
c. x
d. ÷

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF PUNCTUATION MARKS BY USING THEM CORRECTLY IN MATHEMATICS. 0024

Simplify (6 x 8) - (3 x 2) 1987

*a. 42
b. 60
c. 90
d. 12

Simplify (80 ÷ 8) - (4 ÷ 2) 1988

a. 3
*b. 8
c. 20
d. 40

THE STUDENT KNOWS THE DIFFERENCE BETWEEN THE TYPES OF NUMBER SENTENCES - OPEN, CLOSED, TRUE OR FALSE CLOSED SENTENCES AND THE FUNCTIONS OF THESE SENTENCES BY INDICATING THE TYPE A GIVEN SENTENCE REPRESENTS. 0042

$6 = n = 9$ is an open sentence because n: 1989

a. has no value
b. has different values
c. tells you nothing
*d. is a placeholder for a number solution

We cannot tell if $n = 15 + 4$ is true or false because: 1990

a. the solution of $15 + 4$ is unknown
*b. it is an open sentence
c. it is a closed sentence
d. the number for n is the solution

The symbol $>$ would be correct for: 1991

a. $9 \quad 3 + 6$
b. $9 \quad 5 + 4$
*c. $9 \quad 4 + 4$
d. $9 \quad 3 + 9$

There are more objects in set A than in Set B: This is shown by: 1992

a. $N\ (A) = N\ (B)$
b. $N\ (A) < N\ (B)$
c. $N\ (A) \approx N\ (B)$
*d. $N\ \ (A) > N\ (B)$

The set of positive integers for $n < 4$ are: 1993

*a. $\{0, 1, 2, 3\}$
b. $\{5, 6, 7, 8 \ldots.\}$
c. $\{0, 1, 2, 3, 4\}$
d. $\{4, 5, 6, 7\}$
e. $\{0, 1, 2, 3, 4 \ldots\}$

The set of integers for $n > 4$ and $n < 11$ are: 1994

a. $\{4, 5, 6, 7 \ldots\}$
b. $\{5, 6, 7\ldots\ldots\}$
*c. $\{5, 6, 7, 8, 9, 10\}$
d. $\{4, 5, 6, 7, 8, 9, 10, 11\}$

Directions: The universal set for each inequality is 0, 1, 2, 3,... Match each pair of number sentences with its solution set.

b $n > 8$ and $n < 12$ 1995
e $n > 5$ and $n < 9$ 1996
a $n < 13$ and $n > 11$ 1997
d $n > 5$ and $n < 8$ 1998

a. $\{12\}$
b. $\{9, 10, 11\}$
c. $\{5, 6, 7, 8\}$
d. $\{6, 7\}$
e. $\{6, 7, 8,\}$

The one statement that is true is 1999

*a. $12 \div 6 < 5 \times 2$
b. $3 \times 4 < 5 \times 2$
c. $63 \div 9 = 3 \times 3$
d. $6 \times 8 < 9 \times 5$
e. $13 - 8 = 3 + 1$

The false statement is 2000

a. $16 - 7 \neq 3 + 5$
b. $9 > 2 + 5$
*c. $5 \times 4 = 3 \times 6$
d. $14 = 4 + 10$
e. $4 + 7 < 2 \times 6$

The inequality is $6 + n = 14$. The solution of n could not be any numbers 2001

a. less than eight
b. more than eight
*c. equal to eight
d. other than eight

Given these digits and signs 2,3,8,9,12,+,-,=, the proper equation would be 2002

a. 2 + 3 + 8 - 9 = 12
*b. 9 + 8 - 3 - 2 = 12
c. 2 + 9 - 3 + 12 = 8
d. 9 + 3 - 8 - 2 = 12
e. 9 + 8 + 2 - 12 = 3

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF NUMBER SENTENCES BY CHOOSING A NUMBER SENTENCE WHICH BEST EXPRESSES A RELATIONSHIP EXPRESSED VERBALLY. 0055

Jim had 3 bags with 3 rolls in each. Sue had 4 bags with 6 rolls in each. Which number sentence expresses the number of rolls (n) they had altogether? 2003

*a. (3 x 3) + (4 x 6) = n
b. 6 + 10 = n
c. 6 x 10 = n
d. (3 + 3) + (4 + 6) = n

The brown hen laid 3 dozen eggs last month. The white hen laid 4 dozen eggs in the same period. Which number sentence best expresses the number of eggs both hens laid? 2004

a. (3 x 12) x (4 x 12)
*b. (3 x 12) + (4 x 12)
c. (3 x 12) x 4
d. (3 + 12) x (4 + 12)

Mary like the crayons with 16 colors per box. She bought 6 boxes for party favors. Her mother bought 2 boxes with 64 crayons for prizes. The number of crayons they bought is expressed as a number sentence in which of the following? 2005

*a. (6 x 16) + (2 x 64) = n
b. n = 8 x (16 + 64)
c. (16 x 6) x (64 x 2) = n
d. (64 + 64) + (16 + 6) = n

Solve for the unknown 2010

$$\frac{(3 \cdot 15) + (28 - 13)}{6} \times 2 = n$$

a. 6
b. 12
c. 10
*d. 20

The answer to 2011

$$\frac{(6 \cdot 120)(3 \times 0)}{(43 - 23)} \quad 4 = n$$

*a. 0
b. 62
c. 66
d. 216

GIVEN A PROBLEM SITUATION THE CHILD WILL IDENTIFY THE CENTRAL PROBLEM FROM A LIST OF ALTERNATIVES. 0091

Directions: Read the information supplied and choose the sentence that best states the problem to be solved.

10 children, 8 are girls. 2012

a. How many children in all?
b. How many girls?
*c. How many boys?

Hiked 6 miles this morning, 5 miles this afternoon. 2013

a. Will hike how far tomorrow?
*b. How many miles hiked today?
c. How many hours spent hiking?

THE STUDENT CAN APPLY HIS ABILITY TO COMPUTE IN THE 4 BASIC PROCESSES TO SOLVE PROBLEMS THAT INVOLVE COMBINATIONS OF THESE PROCESSES. 0072

Compute and solve for n 2006

$(8 \times 7) - (9 \times 4) = n$

*a. 20
b. 24
c. 82
d. 92

Find the value of x 2007

$x = \frac{9 \times 8 \times 4}{2}$

a. 12
b. 72
*c. 144
d. 288

Work carefully to solve for n 2008

$\frac{(5 + 7(6 \times 3)}{6} = n$

a. 9
b. 30
*c. 36
d. 216

The "General Sherman" tree contains enough wood to build 35 small 5 room houses. Lumber company has 24 such trees. 2014

a. How many rooms can be built?
*b. How many houses can be built?
c. How many more houses than trees?

Dan bought a baseball glove for $14.95 and a football for $5.00. He received 5¢ in change. 2015

a. How much did he spend?
b. How much more did he pay for the glove than the football?
*c. How much money did he start with?

Jan is 3834 days old. Fran is 4015 days old. Nan is 3923 days old. 2016

a. Who is the oldest of the three?
b. How much older than Jan and Nan is Fran?
*c. What is the average age of Jan, Fran and Nan?

Source: Addison-Wesley, Bk. 5, pp. 46, 79, 93, 111, 213

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF THE BASIC MATH TERMS BY MATCHING THE TERM WITH ITS DEFINITION. 0131

Directions: Circle the alternative that answers each question.

In which of the following equations is the numeral 6 an addend? 2017

a. $5 \times 6 = 30$
b. $72 \div 6 = 12$
c. $98 - 6 = 92$
*d. $85 + 6 = 91$

In which of the following equations is the numeral 6 a factor? 2018

*a. 5 x 6 = 30
b. 72 ÷ 6 = 12
c. 98 - 6 = 92
d. 85 + 6 = 91

In which of the following equations is the numeral 36 a sum? 2019

a. 36 ÷ 1 = 36
b. 46 - 10 = 36
c. 6 x 6 = 36
*d. 14 + 12 = 36

In which of the following equations is the numeral 36 a product? 2020

a. 36 ÷ 1 = 36
b. 46 - 10 = 36
*c. 6 x 6 = 36
d. 14 + 12 = 36

In which of the following equations is the numeral 36 a difference? 2021

a. 36 ÷ 1 = 36
*b. 46 - 10 = 36
c. 6 x 6 = 36
d. 14 + 12 = 36

GIVEN A VARIETY OF WORD PROBLEMS THE STUDENT WILL DEMONSTRATE HIS ABILITY TO EMPLOY THE CORRECT PROCESS BY SELECTING FROM A LIST THE PROCESS NECESSARY TO SOLVE THE PROBLEM. 0169

Directions: Choose the process necessary to compute the problems.

John and Mike shared expenses for a day in Chicago. Together they spent ______ dollars. How much did each boy spend? 2022

a. add
b. subtract
c. multiply
*d. divide

Jack spent _____ at one store. He went to another store and spent ______ more. How much did Jack spend in all? 2023

*a. add
b. subtract
c. multiply
d. divide

Mary wanted a new sweater. She had ______ dollars but the sweater was ______. How much more money did she need? 2024

a. add
*b. subtract
c. multiply
d. divide

Jack, Tim, and Larry each had _____. They wanted to buy a ball and bat which was ______ more than they had all together. How much did the bat and ball cost? 2025

*a. add
b. subtract
c. multiply
d. divide

If the length is ______ and the width is _______, what is the area? 2026

a. add
b. subtract
*c. multiply
d. divide

Susan and Mary were playing a game in which red sticks were worth _____ points. Mary won by _____ points. How many more red sticks did Mary have? 2027

a. add
b. subtract
c. multiply
*d. divide

Twenty boys went to a baseball game. Each boy gave the leader an average of _______, for expenses. How much money was the leader holding? 2028

a. add
b. subtract
*c. multiply
d. divide

The length of the rectangle is _____. The width is _____. What is the perimeter? 2029

*a. add
b. subtract
c. multiply
d. divide

Jane ran the 50 yd. dash in _____. Sharon ran it in _____. How much faster did Sharon run? 2030

a. add
*b. subtract
c. multiply
d. divide

A _____ of pencils cost _____. How much does one pencil cost? 2031

a. add
b. subtract
c. multiply
*d. divide

APPLICATIONS OF FRACTIONS

GIVEN A LIST OF FRACTION PAIRS, THE STUDENT WILL APPLY HIS KNOWLEDGE OF THE CROSS MULTIPLICATION METHOD TO SELECT THE PAIR WHICH IS EQUIVALENT. 0152

Directions: Use the cross multiplication method to find the pair of equivalent fractions.

*a. 3/4 = 12/16 2032
b. 6/8 = 10/12
c. 2/3 = 4/5
d. 1/3 = 2/3

a. 5/6 = 6/5 2033
b. 1/3 = 2/9
*c. 2/4 = 3/6
d. 6/7 = 8/9

a. 1/4 = 3/8 2034
b. 2/5 = 6/16
c. 2/6 = 3/12
*d. 1/3 = 3/9

a. 2/4 = 3/9 2035
b. 1/2 = 2/2
*c. 2/5 = 6/15
d. 1/4 = 6/16

a. 5/9 = 10/20 2036
*b. 2/3 = 6/9
c. 3/4 = 6/9
d. 5/7 = 15/14

a. 1/3 = 6/9 2037
b. 1/2 = 14/18
c. 1/5 = 10/55
*d. 1/6 = 5/30

THE STUDENT WILL DEMONSTRATE HIS COMPREHENSION OF EQUIVALENT FRACTIONS, DETERMINED BY CROSS MULTIPLICATION, BY IDENTIFYING MISSING FACTORS IN GIVEN RATIOS. 0251

Directions: Using a cross multiplication equation, determine which number below each ratio is equal to the unknown factor. (N).

5/8 = N/32 "N" is 2038

*a. 20
b. 15
c. 4

3/4 = 9/N "N" is 2039

a. 27
b. 36
*c. 12

2/3 = N/18 "N" is 2040

a. 9
b. 6
*c. 12

3/5 = N/25 "N" is 2041

a. 5
*b. 15
c. 6

1/3 = N/27 "N" is 2042

*a. 9
b. 3
c. 1

7/8 = N/64 "N" is 2043

a. 8
b. 54
*c. 56

8/9 = 56/N "N" is 2044

a. 7
*b. 63
c. 54

5/6 = 45/N "N" is 2045

a. 9
*b. 54
c. 56

2/7 = 18/N "N" is 2046

a. 36
b. 14
*c. 63

6/7 = 36/N "N" is 2047

*a. 42
b. 36
c. 45

Source: Merrill, Discovering Math. 5, p. 300.

THE STUDENT WILL APPLY HIS KNOWLEDGE OF THE MULTIPLICATION OF FRACTIONS IN EVERY DAY PROBLEMS BY IDENTIFYING THE CORRECT ANSWER TO A GIVEN PROBLEM. 0248

Harvey needs 1 2/3 yds. of wire screening to cover each window in his clubhouse. If the clubhouse has 4 windows, how many yards of screening does he need? 2048

- a. 6 1/3 yds.
- b. 10 yds.
- *c. 6 2/3 yds.

If frozen dog food costs 40¢ a pound, how much will 6 3/8 pounds cost? 2049

- *a. $2.55
- b. $2.30
- c. $6.80

A jet airliner is traveling at an average speed of 480 miles per hr. At this rate, how far will the airliner travel in 4 4/5 hours? 2050

- a. 576 mi.
- b. 2284 mi.
- *c. 2304 mi.

How far will an airliner travel in 4 4/5 hours if its average speed is 520 miles per hour? 2051

- *a. 2496 mi.
- b. 624 mi.
- c. 3120 mi.

There was 3/4 of a chocolate pie in the refrigerator. Bill ate 2/3 of what was there. How much of the whole pie did Bill eat? 2052

- a. 5/7
- *b. 1/2
- c. 6/7

A recipe calls for 3/4 cup of butter. If you make only 1/2 of the recipe, how much butter do you need? 2053

a. 1/2 cup
b. 1/3 cup
*c. 3/8 cup

John lives 5/8 of a mile from school. One morning his dog followed him 2/3 of the way to school before John sent him home. How far did John's dog follow him? 2054

a. 5/6
b. 7/24
*c. 5/12 of a mile

For a meat loaf, Mrs. Hunt bought 2 3/4 pounds of ground meat at 64 cents a pound. How much did the meat cost? 2055

*a. $1.76
b. $1.26
c. $5.03

It took Tom 1 3/4 hours to mow the grass. His father paid him 40 cents an hour. How much money did Tom earn? 2056

a. $.80
*b. $.70
c. $.23

Sally bought a piece of cheese that weighed 2 1/2 pounds. At 72 cents a pound, how much did Sally pay for the cheese? 2057

a. $1.75
b. $1.44
*c. $1.80

Source: Discovering Math. 5, Merrill, p. 317.
Elementary Math. 5, Harcourt -Brace, p. 304.
Greater Cleveland Math. Program 5, SRA, pp. 50,51,52.

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF PROCESS INVOLVED IN COMPUTING FRACTIONS BY ANALYZING EQUATIONS AND SELECTING THE PROCESS WHICH WOULD MAKE IT A TRUE EQUATION. 0177

Directions: Select the process which would be necessary to make a true equation.

$\frac{4}{5} \square \frac{2}{3} = \frac{2}{15}$ 2058

a. add
*b. subtract
c. multiply
d. divide

$\frac{3}{4} \square \frac{1}{6} = \frac{11}{12}$ 2059

*a. add
b. subtract
c. multiply
d. divide

$1\ 3/4 \square 2\ 1/3 = 3\ 1/9$ 2060

a. add
b. subtract
*c. multiply
d. divide

$4\ 2/3 \square \frac{5}{6} = 5\ 3/5$ 2061

a. add
b. subtract
c. multiply
*d. divide

2062

$\frac{4}{9} \square \frac{2}{3} = 1\ 1/9$

*a. add
b. subtract
c. multiply
d. divide

2063

$\frac{2}{3} \square \frac{3}{2} = 1$

a. add
b. subtract
*c. multiply
d. divide

2064

$\frac{3}{4} \square \frac{3}{4} = 1$

a. add
b. subtract
c. multiply
*d. divide

2065

$\frac{16}{3} \square \frac{12}{3} = 1\ 1/3$

a. add
*b. subtract
c. multiply
d. divide

2066

$3\ 2/3 \square 1\ 1/3 = 7\ 1/3$

a. add
b. subtract
*c. multiply
d. divide

$1\ 5/7 \boxed{} \frac{3}{4} = 2\ 2/7$ 2067

a. add
b. subtract
c. multiply
*d. divide

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF FRACTIONS BY SOLVING WORD PROBLEMS. 0104

Directions: Read the problems and select the correct answer.

Red Sox 7, White Sox 5. What fraction of the runs did the White Sox score? 2068

a. 1/5
b. 5/7
*c. 5/12
d. 7/12

What fraction of the runs did the Red Sox score? 2069

a. 1/7
b. 5/7
*c. 7/12
d. 7/7

20 children. 15 are boys. What fraction are boys? 2070

*a. 3/4
b. 2/3
c. 5/6
d. 4/5

What fraction are girls? 2071

a. 1/5
b. 1/6
*c. 1/4
d. 1/3

10-foot rope. Climb up 6 feet. How far? 2072

a. 1/6
b. 3/6
*c. 3/5
d. 1/10

Climb up 9/10 of the way. How far? 2073

*a. 9 feet
b. 6 feet
c. 10 feet
d. 1 foot

Climb up ½ of the way. How far? 2074

a. 1 foot
b. 2 feet
*c. 5 feet
d. 7 feet

Climb up 2/5 of the way. How far? 2075

a. 2 feet
b. 5 feet
*c. 4 feet
d. 7 feet

Source: Addison-Wesley, Bk. 5, p. 213.

THE STUDENT WILL DISPLAY HIS ABILITY TO DISTINGUISH BETWEEN FACTS THAT ARE RELEVANT AND FACTS THAT ARE NOT RELEVANT IN THE SOLVING OF FRACTION WORD PROBLEMS. 0105

Directions: Below each problem several phrases are presented. If the information given in the phrase is relevant to the problem solving cross out the R; if the information given in the phrase is non-relevant to the problem solving cross out the N.

Jack and Ann left at 9:00 a.m. on an 8 hour bicycle ride. They averaged 10 miles per hour. For every 60 minutes they rode they rested for 5 minutes.

What fraction of each hour is rest time?

R [✓ N] time they left 2076

R [✓ N] rate per hour 2077

R [✓ N] number of hours ridden 2078

[✓ R] N minutes per hour 2079

[✓ R] N rested for 5 minutes 2080

What fraction of an hour is the total rest time?

R [✓ N] time they left 2081

R [✓ N] rate per hour 2082

[✓ R] N number of hours ridden 2083

[✓ R] N minutes per hour 2084

[✓ R] N rested for 5 minutes 2085

A 7 year old camel weighs 1000 lbs. A 10 year old moose weighs 900 lbs.

What fraction of a ton does the camel weigh?

R [✓ N] age of camel 2086

[✓ R] N weight of camel 2087

R [✓ N] age of moose 2088

R [✓ N] weight of moose 2089

What fraction of the two animals weight does the camel weigh?

R ~~N~~ age of camel 2090
~~R~~ N weight of camel 2091
R ~~N~~ age of moose 2092
~~R~~ N weight of moose 2093

What fraction of their total age is the age of the moose?

~~R~~ N age of camel 2094
R ~~N~~ weight of camel 2095
~~R~~ N age of moose 2096
R ~~N~~ weight of moose 2097

Source: Addison-Wesley, Bk.5, p. 213, 230.

MEASUREMENT

LENGTH, AREA AND VOLUME

THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF BASIC GEOMETRIC MEASUREMENT FORMULAS BY ANALYZING GIVEN DATA AND SELECTING THE ALTERNATIVE THAT PROVIDES ENOUGH INFORMATION TO SOLVE THE PROBLEM. 0141

Directions: Given the data below, select the one which provides enough information to solve the problem.

Find: Volume of a swimming pool 2098

a. The maximum number of people the pool holds is 15.
b. The pool is 20 feet long and 8 feet wide.
c. Every two hours 30 gallons of water is filtered.
*d. The pool is 10 feet deep and has an area of 120 square feet.

Find: The perimeter of a parking lot 2099

a. 12 gallons of white paint were used to paint on the parking guide lines.
b. The area of the parking lot is 800 square feet.
*c. The parking lot is square in shape with each side 20 feet long.
d. The parking lot is rectangular in shape; it is 20 feet long.

Find the area of the stage on which Simon and Garfunkle perform. 2100

a. The stage is 5 feet high and canhold 1600 pounds.
* b. The stage is 45 feet long and 20 feet wide.
c. The perimeter of the stage is 170 feet.
d. The volume is 560 cubic feet.

THE STUDENT WILL SHOW ABILITY TO FIND AREA, PERIMETER, AND VOLUME BY COMPUTING SEVERAL OF THESE MEASURES. 0181

Directions: Compute the following equations and select the answer.

Find the area of a rectangle whose dimensions are L = 64 and W = 12. 2101

a. 252
b. 91
c. 3940
*d. 768

Find the perimeter of a square whose length is 18. 2102

a. 304
b. 36
*c. 72
d. 27

Find the volume if the length is 12, the width is 8 and the height is 4. 2103

*a. 384
b. 24
c. 144
d. 100

Find the volume if the length, width and height is 100. 2104

a. 100,000
b. 10,000
*c. 1,000,000
d. 1,000

Find the area of a square whose length is 33. 2105

a. 333
*b. 1089
c. 1099
d. 132

Find the area of a triangle with a base of 48 and a height of 9. 2106

a. 114
*b. 216
c. 214
d. 108

Find the perimeter of a desk whose length is 42 and whose width is 36. 2107

a. 1512
b. 756
c. 422
*d. 156

Find the volume of an object whose dimensions are 6 by 8 by 2. 2108

a. 32
b. 48
*c. 96
d. 106

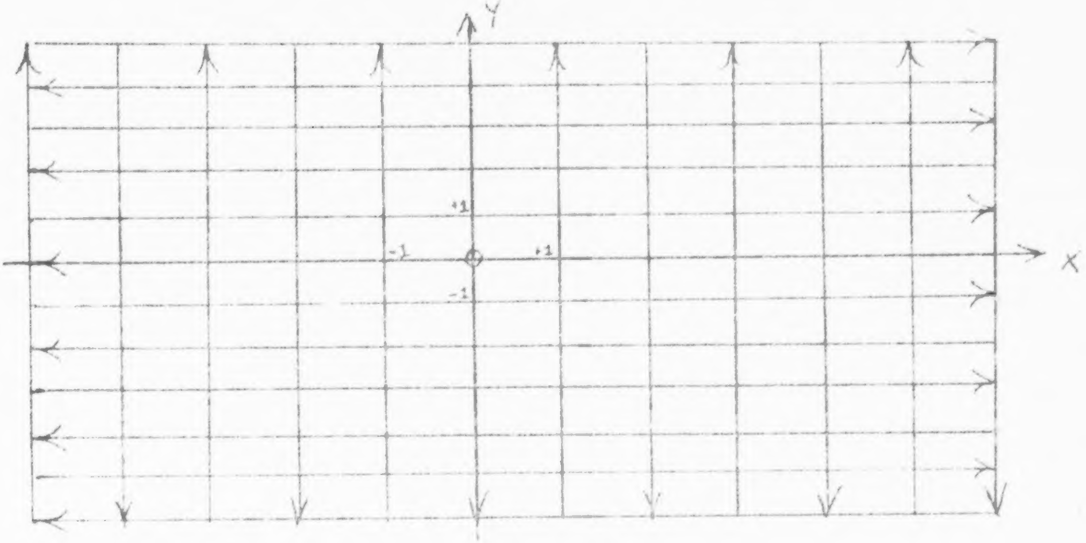
Find the perimeter of an object whose dimensions are 10 x 24. 2109

*a. 68
b. 86
c. 240
d. 480

MAPS

GIVEN A GRAPH RESEMBLING CITY BLOCKS WITH ALL ONE-WAY STREETS, THE STUDENT WILL ANALYZE THE GRAPH TO FIND THE LEAST NUMBER OF BLOCKS IT WOULD TAKE TO GO FROM ONE POINT TO ANOTHER. 0154

Directions: Given a graph of city blocks with all one way streets, find the least number of blocks (1 block is moving from intersection to intersection) it would take to move from one point to another.



(-2,-2) to (0,1) 2110

a. 9
*b. 7
c. 5
d. 12

(-3,2) to (2,-1) 2111

a. 12
b. 9
*c. 10
d. 15

(-1,0) to (2,2) 2112

*a. 7
b. 8
c. 6
d. 10

The least amount of moves from (-4,-3) to (1,2) is 10. How many different ways could achieve the same number of moves. 2113

a. 1
b. 3
*c. 5
d. 6

BILLS AND COINS

THE STUDENT DEMONSTRATES KNOWLEDGE OF THE VALUES OF BILLS AND COINS IN DAILY USE TODAY BY MATCHING COIN VALUES AND SOLVING ADDITION OR SUBTRACTION PROBLEMS INVOLVING MONEY. 0060

When you pay for an item in a store you have several ways of putting the proper coins together. Match the total price in column I with the proper coins in column II.

	Column I	Column II	
d	33¢	a. 1 dime, 1 nickel, 2 pennies	2114
b	47¢	b. 1 quarter, 2 dimes, 2 pennies	2115
a	17¢	c. dime, 3 nickels, 2 pennies	2116
c	27¢	d. 2 dimes, 2 nickels, 3 pennies	2117
		e. 1 dime, 1 nickel, 7 pennies	
		f. 1 quarter, 7 pennies	

The total value of 4 pennies, 1 nickel, 1 dime, 2 quarters is 2118

a. 56¢
b. 1.06¢
*c. 69¢
d. 64¢

The total value of 3 pennies, 3 dimes, 3 half dollars is 2119

a. $1.03
b. $1.53
c. $1.33
*d. $1.83

The total value in cents for 2 pennies, 3 nickels, 3 dimes, 1 dollar is 2120

*a. 147¢
b. 135¢
c. $1.42
d. $1.37
e. $1.47

The total value of 3 pennies, 8 dimes, 3 one-dollar bills, 1 five dollar bill is 2121

a. $4.83
b. $5.38
c. $8.38
*d. $8.83

Express the sum of 87¢, 16¢ and 3¢ in dollars and cents 2122

a. 106 cents
b. One dollar sixteen cents
*c. $1.03
d. one hundred three cents

Express the sum of 17¢, 243¢, 28¢ in dollars and cents 2123

a. 288¢
b. 2.88¢
c. 2 hundred 88 cents
d. $2.88

The sum of $1.43 is *a. $3.21 2124
.16 b. 2.21
.35 c. 3.01
.22 d. 2.01
1.05

The cash register records these sales. 2125

$ .16 The sum is
.09
1.52 a. $6.66
4.29 *b. $6.74
.39 c. $6.68
.29 d. $6.64

Solve

$4.21 2126
- 2.17

a. $214
b. $204
*c. $2.04
d. $2.14

Solvo

$17.16 2127
- 5.98

*a. $11.18
b. $12.28
c. $23.14
d. $22.04

Mary was going to buy something at the toy store. Mary had $5.10 What is the most number of different items she could buy at these prices? 2128

Beach balls 29¢
Balloons 25¢ per package
Dolls $3.95
Stuffed toys $3.00
Doll Clothes 79¢
Jump rope 19¢
Games $1.75
Coloring Books 17¢
Crayons 10¢

SALE
ALL PRICES
REDUCED

a. 3
b. 5
*c. 7
d. 9

STATISTICS

THE STUDENT DEMONSTRATES KNOWLEDGE OF THE CONCEPT AVERAGE BY CALCULATING AVERAGES OR CARDINAL NUMBERS FROM GIVEN INFORMATION. 0062

Set A = {2,4,6,8,10} 2129
The average of the numbers in Set A is

a. 30
b. 15
c. 12
*d. 6

Set B = {364, 487, 563, 718} 2130
The average of the numbers in Set B is

a. 2132
b. 500
c. 1066
*d. 533

{2, 4, 6, 7, 8, 9} 2131
The average of the set of numbers is

a. 36
b. 12
c. 18
* d. 6

Fran ate 6 cookies. Mary ate 5 cookies and Sue ate 7 cookies. The average number eaten was 2132

a. 3
*b. 6
c. 9
d. 18

The baseball team kept this record of its hits. 2133

Game	Hits
1	4
2	10
3	6
4	3
5	0
6	1

The average number of hits for the games recorded is

a. 3
*b. 4
c. 6
d. 12
e. 24

Mr. Brown drove 1827 miles in a week. The average number of miles driven each day was 2134

a. 309
*b. 261
c. 26
d. 903

There are 6 girls in the Blue Patrol. They sell an average of 12 boxes each during the candy sale. How many boxes were sold? 2135

a. 2
b. 18
c. 36
*d. 72

The Thomas family drove an average of 225 miles each day of their 15 day vacation. How many miles did they drive? 2136

*a. 3375
b. 75
c. 3500
d. 15

THE STUDENT DEMONSTRATES KNOWLEDGE OF THE MEDIAN OF A SET OF NUMBERS BY INDICATING THE MEDIAN FOR A GIVEN SET. 0063

Median can best be described as 2137

a. number in set
b. average of numbers in set
*c. middle number in set
d. sum of numbers in set

{45, 60, 95, 105, 150} 2138
The median of the set is

a. 91
*b. 95
c. 100
d. 97

{11, 16, 17, 19, 24, 29} 2139
The median for the set is

*a. 18
b. 17
c. 19
d. 19 r 2

{205, 222, 226, 230, 243} 2140
The median for the set is

a. 222
b. 225 r 1
*c. 226
d. 230

{19, 26, 13, 17, 17, 33, 29} 2141
The median for the set is

a. 17
*b. 19
c. 20
d. 22

Find n 2142
n = (20 ÷ 4) + (8 ÷ 4)

a. 4
b. 5
*c. 7
d. 8

Solve 63 ÷ (6 ÷ 3) = n 2143

a. 1
*b. 7
c. 9
d. 12

Solve for 2144
n = 140 ÷ (40 ÷ 2)

a. 20
b. 14
*c. 7
d. 2

8 ÷ □ = 8. The reason this equation could be a true statement is 2145

*a. identity element of 1
b. multiplication is the inverse operation
c. identity element of 0
d. division is commutative

Given the equation 5641 ÷ 7 = n we think of the dividend as 58 hundreds and 41. The best estimate for the quotient would be 2146

a. 7 x 7 hundreds < 58 hundreds
*b. 7 x 8 hundreds < 58 hundreds
c. 7 x 9 hundreds < 53 hundreds
d. 7 x 10 hundreds < 58 hundreds

In the equation, 8462 ÷ 9 = n, the dividend can be thought of as 84 hundreds and 62. Estimating the quotient we would choose 2147

a. 9 x 7 hundreds < 84 hundreds
b. 9 x 8 hundreds < 84 hundreds
*c. 9 x 9 hundreds < 84 hundreds
d. 9 x 10 hundreds < 84 hundreds

534 ÷ 21 = n. The dividend is 53 tens and 4. For an estimate of the quotient we would choose 2148

a. 21 x 1 ten < 53 tens
*b. 21 x 2 tens < 53 tens
c. 21 x 3 tens < 53 tens
d. 21 x 4 tens < 53 tens

343 ÷ 19 = n. The dividend is 34 tens and 3. The best choice for an estimate of the quotient is 2149

a. 19 x 0 tens < 34 tens
*b. 19 x 1 ten < 34 tens
c. 19 x 2 tens < 34 tens
d. 19 x 3 tens < 34 tens

7100 ÷ 73 = n. The dividend is 71 hundreds an estimate of the quotient would be 2150

a. 73 x 10 hundreds < 71 hundreds
*b. 73 x 9 hundreds < 71 hundreds
c. 73 x 8 hundreds < 71 hundreds
d. 73 x 7 hundreds < 71 hundreds

9653 ÷ 56 = n. The dividend is 96 hundreds and 53. An estimate of the quotient would be 2151

*a. 56 x 1 hundred < 96 hundreds
b. 56 x 2 hundreds < 96 hundreds
c. 56 x 3 hundreds < 96 hundreds
d. 56 x 4 hundreds < 96 hundreds

Solve ☐ = 5676 ÷ 33 2152

a. 164 r 4
*b. 172
c. 180 r 6
d. 171 r 26

Solve $36\overline{)4804}$ 2153

*a. 133 r 16
b. 140 r 4
c. 132 r 34
d. 143 r 6

$\frac{7570}{30}$ = ☐ 2154

a. 25 r 21
b. 250 r 10
*c. 252 r 10
d. 253 r 10

☐ = $\frac{965}{25}$ 2155

a. 29
b. 35
*c. 38
d. 41

7438 ÷ 80 = n 2156

a. 1026
b. 929 r 6
*c. 92 r 78
d. 91

$\square = 3502 \div 20$ 2157

*a. 175 r 2
b. 174 r 2
c. 170
d. 125 r 2

$\frac{2913}{70} = \square$ 2158

a. 40 r 13
*b. 41 r 43
c. 41 r 33
d. 416 r 1

$\square = \frac{3628}{40}$ 2159

a. 91 r 8
*b. 90 r 28
c. 81 r 8
d. 90 r 18

$30\overline{)4562}$ 2160

a. 128 r 22
b. 141 r 2
*c. 152 r 2
d. 153 r 2

$44\overline{)3596}$ 2161

a. 90 r 2
b. 80 r 42
c. 81 r 42
*d. 81 r 32

2963 ÷ 28 = ☐ 2162

a. 15 r 23
b. 151 r 5
c. 102 r 7
*d. 105 r 23

☐ = 5850 ÷ 54 2163

a. 18 r 18
b. 106 r 16
*c. 108 r 18
d. 180 r 8

$\frac{5749}{49} = n$ 2164

a. 101
*b. 117 r 16
c. 118 r 7
d. 120 r 9

15 x ☐ = 650 2165

a. 40
*b. 43 r 5
c. 9750
d. 3950

☐ x 25 = 900 2166

a. 18500
b. 22500
*c. 36
d. 35

22 x ☐ = 896 2167

a. 19712
b. 18502
c. 41
*d. 40 r 16

☐ x 41 = 1694 2168

a. 42 r 12
*b. 41 r 13
c. 68354
d. 69454

45 x ☐ = 540 2169

a. 10
*b. 12
c. 23100
d. 24300

☐ x 39 = 723 2170

a. 28197
b. 27197
c. 23 r 26
*d. 18 r 11

806 = 34 x ☐ 2171

a. 20 r 26
*b. 23 r 24
c. 27304
d. 27404

653 = ☐ x 27 2172

a. 17631
b. 18531
c. 20 r 13
*d. 24 r 5

16 x a + b = 908 2173

*a. a = 56 b = 12
b. a = 506 b = 12
c. a = 14524 b = 16
d. a = 14424 b = 16

427 = (a x 14) + b 2174

*a. a = 30 b = 7
b. a = 37 b = 9
c. a = 5958 b = 14
d. a = 5979 b = 14

(20 x a) + b + 1680 2175

a. a = 80 b = 20
*b. a = 84 b = 0
c. a = 22600 b = 0
d. a = 33600 b = 20

763 = (a x 32) + b 2176

a. a = 23316 b = 32
b. a = 24416 b = 12
*c. a = 23 b = 27
d. a = 24 b = 5

$14 \times \square = \frac{1240}{60}$ 2177

a. 280
b. 28
*c. 1 r 6
d. 14 r 4

$45 \times \square = \frac{650}{5}$ 2178

a. 20 r 5
b. 130
c. 5850
*d. 2 r 10

$(764 - 4) = \square \times 26$ 2179

a. 4966
b. 191
*c. 7 r 9
d. 8 r 22

$(15 - 3) \times \square = 800$ 2180

*a. 160
b. 400
c. 4000
d. 16

$780 = \square \times \frac{45}{3}$ 2181

a. 11700
*b. 52
c. 1070
d. 50 r 5

$\frac{20}{5} \times \square = \frac{427}{7}$ 2182

*a. 15 r 1
b. 244
c. 241
d. 14 r 5

$\frac{36}{4} \times \square = \frac{580}{10}$ 2183

a. 522
*b. 6 r 4
c. 64 r 4
d. 502

$\frac{96 \div 2}{72 \div 6} \times \square = \frac{144}{12}$ 2184

a. 12
*b. 1
c. 144
d. 0

$\frac{176}{8} = \square \times \frac{242 \div 11}{121 \div 11}$ 2185

a. 22
*b. 2
c. 11
d. 121

$\frac{45}{3} \times \square = \frac{450}{15}$ 2186

a. 300
b. 450
*c. 2
d. 15

$\frac{16 \div 2}{16 \div 4} \times \square = \frac{4080}{20}$ 2187

*a. 102
b. 408
c. 204
d. 48

THE STUDENT KNOWS THE DEFINITION OF MODE BY SELECTING THE MODE FOR A SET OF NUMBERS. 0070

Mode can best be described as ____________. 2188

a. the average of a set of numbers.
*b. the most frequently used in a set of numbers.
c. the middle number in a set of numbers.
d. the sum of a set of numbers.

Tom received these grades on 6 math tests, 65, 75, 80, 80, 90, 78. The mode for this set of scores is 2189

a. 79
*b. 80
c. 78
d. 65

The record of the scores of the Cougar football team showed out of the last 7 games they made 10, 17, 21, 21, 10, 10, 17 points. The mode for this set of scores is 2190

a. 21
b. 17
*c. 10
d. 11

THE STUDENT KNOWS THE DEFINITION OF RANGE BY COMPUTING THE RANGE OF A SET OF NUMBERS. 0071

In a set of numbers the range is ____________. 2191

*a. the difference between the highest and the lowest.
b. the sum of the elements.
c. the middle element.
d. the sum of the elements divided by the number of elements.

The 6 P. M. temperature was recorded for 7 days. 2192

Date	Temp.
5	70
6	68
7	79
8	82
9	72
10	62
11	58

The range is

a. 58 degrees
b. 70 degrees
c. 82 degrees
*d. 24 degrees

$\{100, 75, 98, 68, 72, 85, 100, 88, 70, 80\}$ 2193

The set of numbers above are the scores on a test ten students took. The range of the set is

a. 83
*b. 32
c. 100
d. 68

NUMBER SYSTEMS

FINITE-INFINITE

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF A FINITE NUMBER SYSTEM BY DEFINING IT AND SOLVING RELEVANT PROBLEMS. 0076

A finite number system is 2194

a. base 10
*b. clock arithmetic
c. ordered numbers
d. finite numbers

In a finite system based on the numbers on the clock we do not use 2195

a. zero
b. seven
c. eight
*d. twelve

In the finite system seven the set of numbers is 2196

a. $\{1, 2, 3, 4, 5, 6, 7\}$
b. $\{0, 1, 2, 3, 4, 5, 6, 7\}$
*c. $\{0, 1, 2, 3, 4, 5, 6\}$
d. $\{2, 3, 4, 5, 6\}$

The equation in Column II can be paired with an answer in Column I.

	Column I	Column II	
c	11	a. $3 + 7 = n$	2197
d	9	b. $8 + 6 \overset{12}{=} n$	2198
a	10	c. $10 - 11 \overset{12}{=} n$	2199
b	2	d. $10 + 11 \overset{12}{=} n$	2200
		e. $9 - 6 \overset{12}{=} n$	

Multiplication in a finite system is based on successive additions of addends

$2 \times 8 = 16 \quad 16 \overset{12}{=} 6$

therefore $5 \times 10 \overset{12}{=} n$ 2201

a. 50
b. 0
*c. 2
d. 5

In finite 7 these equations in Column II are correct for which answers in Column I.

b	6	a. $6 + 3 =$ ____	2202
c	0	b. $5 + 4 =$ ____	2203
d	4	c. $3 + 4 =$ ____	2204
a	2	d. $5 + 6 =$ ____	2205
		e. $2 + 3 =$ ____	

Match the equations in Column II with the proper answers in Column I.

f	4	a. $4 \times 5 \overset{7}{=}$ ____	2206
a	6	b. $2 - 4 \overset{7}{=}$ ____	2207
e	0	c. $5 - 6 \overset{7}{=}$ ____	2208
c	6	d. $3 \times 4 \overset{7}{=}$ ____	2209
b	5	e. $6 \times 6 \overset{7}{=}$ ____	2210
		f. $3 \times 6 \overset{7}{=}$ ____	

A finite number system cannot have 2211

a. distributive properties
b. multiplication property of one
c. associative properties
*d. multiplication property of zero
e. commutative property

THE STUDENT RECALLS THE DEFINITION OF FINITE SETS AND INFINITE SETS BY USING THE CARDINAL NUMBER TO DETERMINE WHETHER GIVEN SETS ARE FINITE OR INFINITE. 0034

An example of an infinite set is a set in which 2212

a. all members can be listed
b. a cardinal number can be given
*c. a series of dots shows additional elements
d. the last element follows three dots

The best example of a finite set is a set in which 2213

a. a series of dots is given for some of the elements
*b. all members are listed
c. a cardinal number can be given for the elements
d. the elements are always seen

Which of the sets is NOT a finite set? 2214

a. dog, cat
b. a,b,c...z
*c. 1,2,3....
d. Jan.,Feb.,Mar....Dec.

Which of the sets is a finite set? 2215

a. the counting numbers
b. the polygons that can be drawn
*c. the animals in Brookfield Zoo
d. all the odd numbers

The magic computor scans the universe. It would NOT be able to count 2216

a. the grains of sand on the beaches
b. the fish in all the waters
*c. the sounds that can be made
d. brick houses in the cities

PROPERTIES

THE STUDENT RECALLS FACTS ABOUT NUMBER PAIRS BY STATING THAT THEY ARE NOT COMMUTATIVE. 0036

The best description of number pairs is they have 2217

a. associative properties
b. commutative properties
c. unrelated digits
*d. a definite order
e. a mathematical function

Everytime Mary's pet hen laid an egg she added 3 pennies to her bank. Which of these sets of number shows the correct pennies for each egg? 2218

*a. (1,3)
b. (3,1)
c. (1,4)
d. (4,1)
e. (2,5)

THE STUDENT CAN APPLY THE ASSOCIATIVE PROPERTY TO SOLVE A MULTIPLICATION PROBLEM. 0052

The factors 6 x 810 are not equal to 2219

*a. (6 x 90) + (6 x 90)
b. (6 x 800) + (6 x 10)
c. 4800 + 60
d. 6 x (800 + 10)

The factors 7 x 840 are not equal to 2220

a. (7 x 800) + (7 x 40)
b. 7x (800 + 40)
c. 7 x (7 x 120)
*d. (7 x 800) + 40

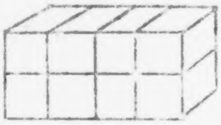
Another way of expressing the factors 6 x 1800 is 2221

a. 6 x (180 + 10)
b. 6 x (180 + 100)
c. 6 x (180 x 100)
d. (6 x 18) + (6 x 100)
*e. 6x(100 + 800)

THE STUDENT WILL ANALYZE 3-DIMENSIONAL ARRAYS TO DEMONSTRATE THE ASSOCIATIVE PROPERTY OF MULTIPLICATION BY IDENTIFYING THE CORRECT EQUATION SHOWN BY THE ARRAY. 0190

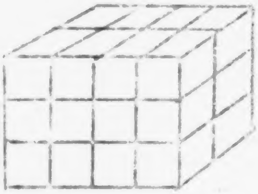
Which equation correctly describes this array? 2222

a. 2 x 4 = 8
b. 8 x 1 = 8
*c. 2 x 4 x 1 = 8



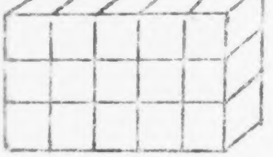
Which equation correctly describes the following array? 2223

*a. 3 x 4 x 2
b. (4 x 2) + (3 x 2)
c. 12 x 2 x 1



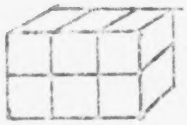
Which equation describes the following array? 2224

a. (5 x 3) + (5 x 1)
b. 4 x 5
*c. 3 x 5 x 1



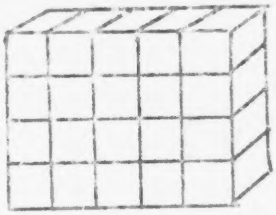
Which equation describes the following array? 2225

a. (2 x 3) (2 x 1)
*b. 2 x 3 x 1
c. 3 x 3



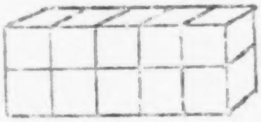
Which equation describes the following array? 2226

*a. 4 x 5 x 1
b. 5 x 6
c. 5 x 5 x 1



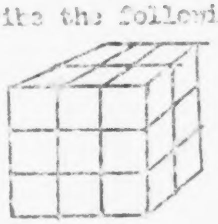
Which equation does NOT describe the following array? 2227

a. 2 x 5 x 2
*b. (2 x 2) (2 x 5)
c. 2 x 2 x 5



Which equation does NOT describe the following array? 2228

a. 3 x 3 x 2
b. 3 x 2 x 3
*c. 5 x 3 x 2

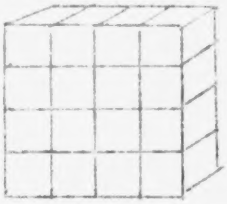


Using the array, identify the equation which correctly describes it. 2229

*a. 3 x 3 x 2
b. 5 x 5
c. 5 x 3 x 2

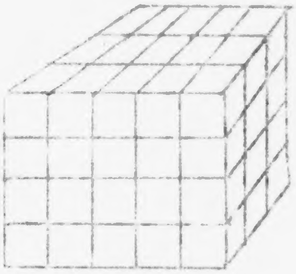
Which equation correctly identifies the following array? 2230

*a. 4 x 4 x 1
b. 5 x 5 x 1
c. 5 x 4 x 1



Which equation correctly identifies the following array? 2231

a. 7 x 4 x 3
b. 4 x 8 x 3
*c. 4 x 5 x 3



Source: Discovering Math 5. Merrill, pp. 68-69.

THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF THE ASSOCIATIVE PRINCIPLE OF MULTIPLICATION BY IDENTIFYING EQUATIONS USING THIS PRINCIPLE. 0196

Directions: Select the correct answer.

Which number sentence below correctly illustrates the associative principle of multiplication? 2232

a. 4 x 6 = 6 x 4
*b. 4 x (3 x 6)
c. (2 x 3) + (2 x 3)

Which number sentence below illustrates the associative principle of multiplication? 2233

*a. (7 x 2) x 4
b. 7 x 4 = 4 x 7
c. (3 x 2) + (4 x 2)

Which phrase below refers to the associative principle of multiplication? 2234

a. Changing order of factors
*b. Pairing neighboring factors
c. Breaking apart a factor

Which number sentence below does NOT illustrate the associative principle of multiplication? 2235

a. 4 x (8 x 9)
b. (4 x 8) x 9
*c. 2 x 3 = 3 x 2

Which number sentence below illustrates the associative principle of multiplication? 2236

*a. (64 x 39) x 21
b. (60 x 39) + (4 x 39)
c. 64 x 39 = 39 x 64

Which number sentence below illustrates the associative principle of multiplication? 2237

*a. (391 x 426) x 100
b. (300 x 426) + (91 x 426)
c. 391 x 426 = 426 x 391

Which number sentence below illustrates the associative principle of multiplication? 2238

a. (a x b) + (c x b)
*b. (a x b) x c
c. a x b = b x a

Which number sentence below does NOT illustrate the associative principle of multiplication? 2239

a. 4 x (2 x 3)
b. (4 x 2) x 3
*c. (4 x 2) + (2 x 2)

Which number sentence below illustrates the associative principle of multiplication? 2240

*a. (6 x 3) x 4
b. 6 x 4 = 4 x 6
c. (6 x 3) + (6 x 3)

Which number sentence below illustrates the associative principle of multiplication? 2241

a. 5 x 6 = 6 x 5
b. (5 x 3) + (5 x 3)
*c. (5 x 6) x 2

Source: Merrill, Discovering Math 5, p. 31.
Harcourt, Brace, Elementary Math. 5., p. 47.

THE STUDENT WILL DEMONSTRATE AN UNDERSTANDING OF THE ASSOCIATIVE PRINCIPLE AS APPLIED TO THE MULTIPLICATION OF FRACTIONS BY IDENTIFYING ONE FACTOR IN AN EQUATION. 0241

(1/3 x 1/5) x 1/2 = N x 1/2. N is 2242

a. 1/8
b. 2/15
*c. 1/15

(5/1 x 3/2) x 1/2 = N x 1/2. N is 2243

a. 15/1
*b. 15/2
c. 8/2

(2/7 x 1/3) x 3/5 = N x 1/3. N is 2244

*a. 2/21
b. 2/10
c. 1/21

(3/1 x 2/1) x 5/1 = N x N. N is 2245

a. 5/16 x 5/1
b. 16/1 x 1/1
*c. 6/1 x 5/1

(4/5 x 2/3) x 1/3 = N x 1/3. N is 2246

a. 6/8
b. 6/15
*c. 8/15

(2/7 x 1/5) x 2/3 = N x 2/3. N is 2247

*a. 2/35
b. 2/12
c. 1/12

(4/5 x 2/9) x 3/1 = N x 3/1. N is 2248

a. 6/45
b. 8/14
*c. 8/45

6/5 x (1/2 x 2/1) = 6/5 x N. N is 2249

*a. 2/2
b. 1/2
c. 1

5/1 x (3/2 x 1/2) = 5/1 x N. N is 2250

a. 1/4
*b. 3/4
c. 1/2

4/5 x (2/9 x 3/1) = 4/5 x N. N is 2251

*a. 6/9
b. 5/9
c. 3/9

Source: SRA Greater Cleveland Math. Program 5, p. 55.

THE STUDENT WILL APPLY HIS KNOWLEDGE OF THE ASSOCIATIVE PROPERTY OF ADDITION BY MATCHING THE GIVEN EXAMPLES WITH THE GIVEN SOLUTIONS. 0263

Directions: Match column I with its correct solution in column II by placing the letter of the problem from column I on the line in front of its solution in column II.

Column I

a. 8 + 9 = 8 + 5 + 4
= 8 + (5 + ___)
= 8 + ___
8 + 9 = ___

b. 2 + 14 = 2 + 8 + 6
= 8 + (2 + ___)
= 8 + ___
2 + 14 = ___

c. 7 + 3 + 3 = 7 + 6
3 + (7 + ___) =
3 + ___ =
___ = 7 + 6

d. 8 + 4 = 5 + 5 + 2
= 5 + (___ + 2)
= 5 + ___
8 + 4 = ___

e. 6 + 10 = 8 + 4 + 2 + 2
= (4 + ___) + (8 + 2)
= ___ + 10
6 + 10 = ___

f. 5 + 3 + 3 = 5 + 6
(5 + 3) + ___ =
___ + 3 =
___ = 5 + 6

Column II		
g	7, 4, 11	2252
j	2, 10, 18	2253
e	2, 6, 16	2254
___	3, 5, 7	2255
i	1, 5, 7	2256
a	4, 9, 17	2257
___	2, 8, 12	2258
h	4, 10, 19	2259
c	3, 10, 13	2260
b	6, 8, 16	2261

g. 7 + 2 + 2 = 10 + 1
(2 + 2) + ___ =
=
7 + ___ = 10 + 1

_d_ 5, 7, 12 2262

_f_ 3, 8, 11 2263

h. 15 + 4 = 4 + 9 + 6
= 9 + (6 + ___)
= 9 + ___
15 + 4 = ___

i. 4 + 3 = 4 + (2 + 1)
= (4 + ___) + 2
= ___ + 2
4 + 3 = ___

j. 9 + 9 = 8 + 8 + 2
= (8 + ___) + 8
= ___ + 8
9 + 9 = ___

Source: Houghton Mifflin, p. 39.

THE STUDENT CAN APPLY THE COMMON FACTOR PROPERTY OR THE DISTRIBUTIVE PROPERTY TO SOLVE MULTIPLICATION EQUATIONS. 0053

If we were to find the sum of 12 addends of 7 we could write the equation 2264

a. 12 + 7 =
b. (5 x 7) x (7 x 7) =
c. (5 + 7) x 12 =
*d. 7 x (5 + 7) =

The equation for 5 sets of 8 and six sets of 8 is 2265

a. (5 x 8) x (6 x 8) =
b. 8 x (5 + 8) =
*c. (5 + 6) x 8 =
d. 30 + 64 =

Eight sets of nine could not be expressed 2266

a. 8 • 9 = n
b. (5 + 3) 9 = n
*c. (5 x 9)(3 x 9) = n
d. 45 + 27 = n

THE STUDENT WILL ANALYZE ARRAYS DEMONSTRATING THE DISTRIBUTIVE PROPERTY OF MULTIPLICATION BY CORRECTLY IDENTIFYING THE BROKEN FACTOR. 0189

Identify the distrubution of a factor in the following array. 2267

o o o o o o o o o o ● ●
o o o o o o o o o o ● ●
o o o o o o o o o o ● ●
o o o o o o o o o o ● ●
o o o o o o o o o o ● ●
o o o o o o o o o o ● ●
o o o o o o o o o o ● ●

a. 7 = 3 + 4
*b. 12 = 10 + 2
c. 84 = 70 + 14

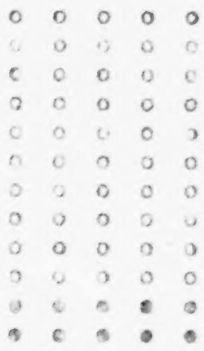
Identify the distrubution of a factor in the following array. 2268

o o o o o o o o
o o o o o o o o
o o o o o o o o
o o o o o o o o
o o o o o o o o
o o o o o o o o
o o o o o o o o
● ● ● ● ● ● ● ●
● ● ● ● ● ● ● ●
● ● ● ● ● ● ● ●

*a. 10 = 7 + 3
b. 8 = 4 + 4
c. 80 = 56 + 24

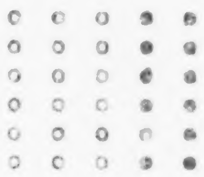
Name the factor which is "distributed" in the following array. 2269

a. 5
b. 60
*c. 12



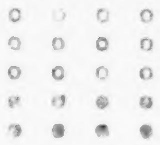
Name the factor which is distributed in the following array. 2270

*a. 5
b. 6
c. 30



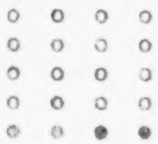
Identify the distrubution of a factor in the following array. 2271

a. 2 + 2 = 4
*b. 3 + 2 = 5
c. 12 + 8 = 20



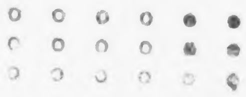
Name the factor which is distributed in the following array. 2272

*a. 5
b. 4
c. 20



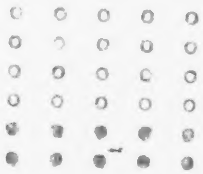
Name the factor which is distrubuted in the following array. 2273

*a. 6
b. 18
c. 3

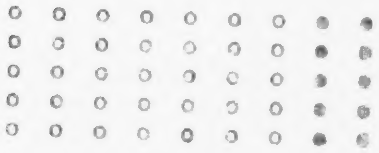


Which number sentence shows a broken factor in the following array? 2274

a. 3 + 2 = 5
*b. 4 + 2 = 6
c. 20 + 10 = 30

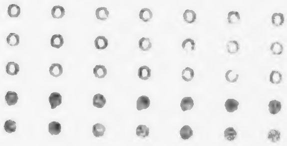


Which number sentence shows a broken factor in the following array? 2275



*a. 7 + 2 = 9
b. 35 + 10 = 45
c. 3 + 2 = 5

Name the factor which is distributed in the following array. 2276



a. 7
b. 35
*c. 5

Source: Discovering Math. 5, Merrill, pp. 60-61.

THE STUDENT WILL APPLY HIS KNOWLEDGE OF THE DISTRIBUTIVE PRINCIPLE OF MULTIPLICATION BY USING THIS PRINCIPLE IN A HORIZONTAL OUTLINE. 0197

Circle the number below which is missing in the outline. 2277
14 x 16 = N
(10 + 4) x 16 = N
(10 x 16) + ? x 16 = N

a. 10
*b. 4
c. 14

Circle the number below which is missing in the outline. 2278
13 x 18 = N
(10 + 3) x 18 = N
(10 x 18) + (3 x ?) = N

*a. 18
b. 10
c. 3

Circle the number below which is missing in the outline. 2279
15 x 15 = N
(10 + 5) x 15 = N
(10 x 15) + (5 x 15) = N
150 + ? = N

a. 65
b. 150
*c. 75

Circle the number below which is missing in the outline. 2280
12 x 15 = N
(10 + 2) x 15 = N
(10 x 15) + (? x 15) = N

*a. 2
b. 10
c. 15

Circle the number below which is missing in the outline. 2281

$16 \times 17 = N$

$(10 + ?) \times 17 = N$

a. 10
b. 17
*c. 6

Circle the number below which is missing in the outline. 2282

$14 \times 16 = N$

$(10 + 4) \times (10 \times ?) = N$

a. 16
*b. 6
c. 4

Circle the number below which is missing in the outline. 2283

$14 \times 16 = N$

$(? + 4) \times (10 + 6) = N$

*a. 10
b. 4
c. 6

Circle the number below which is missing in the outline. 2284

$14 \times 15 = N$

$(10 + 4) \times (10 + 5) = N$

$(10 \times 10) + (10 \times 5) + (4 \times 10) + (? \times 5) = N$

a. 5
*b. 4
c. 10

Circle the number below which is incorrectly computed in the following outline. 2285

$18 \times 16 = N$

$(10 + 8) \times (10 + 6) = N$

$(10 \times 10) + (10 \times 6) + (8 \times 10) + (8 \times 6) = N$

$100 + 600 + 80 + 48 = N$

a. 100
b. 48
*c. 600

Circle the number below which is missing in the outline. 2285
13 x 12 = N
(10 + 3) x (10 + 2) = N
(10 x 10) + (10 x 2) + (3 x 10) + (3 x 2) = N
100 + 20 + 30 + 6 = ?

a. 256
b. 210
*c. 156

Source: Merrill, Discovering Math, 5. pp. 60-61.

THE STUDENT WILL APPLY HIS KNOWLEDGE OF THE DISTRIBUTIVE PRINCIPLE OF DIVISION BY IDENTIFYING MISSING NUMBERS IN GIVEN DISTRIBUTIVE OUTLINES. 0203

Which number below is the missing number in the outline: 2287
84 ÷ 4 = N
(80 + 4) ÷ 4 = N
(80 ÷ ?) + (4 ÷ 4) = N

a. 80
*b. 4
c. 2

Which number below is the missing number in the outline: 2288
36 ÷ 3 = N
(30 + 6) ÷ 3 = N
(30 ÷ ?) + (6 ÷ 3) = N

*a. 3
b. 6
c. 2

Which number below is the missing number in the outline: 2289
216 ÷ 3 = N
(210 + ?) ÷ 3 = N

a. 16
b. 3
*c. 6

Which number below is the missing number in the outline: 2290
$328 \div 4 = N$
$(320 + 8) \div 4 = N$
$(? \div 4) + (8 \div 4) = N$

a. 328
b. 8
*c. 320

Which numbers below are the missing numbers in the outline: 2291
$186 \div 2 = N$
$(? + ?) \div 2 = N$

a. 62 and 124
*b. 180 and 6
c. 100 and 86

Which numbers below are the missing numbers in the outline: 2292
$427 \div 7 = N$
$(? + ?) \div 7 = N$

*a. 420 and 7
b. 400 and 27
c. 300 and 120

When we rename a dividend as two addends, those addends must be 2293

a. round numbers
b. sum of the dividend
*c. divisible by the given divisor

Which number below is the missing number in the outline: 2294
$1296 \div 3 = N$
$(1200 + ? + 6) \div 3 = N$

a. 96
*b. 90
c. 9

Which number below is the missing number in the outline: 2295

$936 \div 3 = N$

$(? + 30 + 6) \div 3 = N$

- a. 9
- b. 90
- *c. 900

Which number below is the missing number in the outline: 2296

$1869 \div 3 = N$

$(? + 60 + 9) \div 3 = N$

- a. 180
- *b. 1800
- c. 18

Source: Discovering Math. 5, Merrill, p. 80,82.

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF THE COMMUTATIVE PRINCIPLE OF MULTIPLICATION BY IDENTIFYING EQUATIONS USING THIS PRINCIPLE. 0195

Which equation below shows the commutative principle of multiplication? 2297

- a. $3 \times (2 \times 4)$
- *b. $2 \times 4 = 4 \times 2$
- c. $(5 \times 4) + (5 \times 3)$

Which equation below shows the commutative principle of multiplication? 2298

- *a. $8 \times 4 = 4 \times 8$
- b. $(8 \times 4) + (8 \times 2)$
- c. $(4 \times 2) \times 3$

Which equation below does NOT show the commutative principle of multiplication? 2299

a. 8 x 9 = 9 x 8
b. 13 x 11 = 11 x 13
*c. 2 x (3 x 4)

Which equation below does NOT show the commutative principle of multiplication? 2300

a. 13 x 4 = 4 x 13
*b. (10 x 4) + (10 x 4)
c. 9 x 10 = 10 x 9

Which equation below shows the commutative principle of multiplication? 2301

*a. 6 x 8 = 8 x 6
b. (4 x 3) x 6
c. (10 x 2) + (4 x 2)

Which equation below shows the commutative principle of multiplication? 2302

a. (2 x 5) x 2
*b. 2 x 5 = 5 x 2
c. (5 x 2) + (5 x 2)

Which equation below shows the commutative principle of multiplication? 2303

a. (13 x 5) x 5
*b. 13 x 5 = 5 x 13
c. (10 x 5) + (3 x 5

Which phrase expresses the principle of commutation? 2304

*a. Order principle
b. Grouping principle
c. Multiplication-addition principle

Which equation below shows the commutative principle of multiplication? 2305

a. $(a \times b) \times c$
b. $(a \times c) + (b \times c)$
*c. $a \times b = b \times a$

Which equation below shows the commutative principle of multiplication? 2306

a. $(23 \times 4) \times 7$
b. $(20 \times 4) + (3 \times 4)$
*c. $23 \times 4 = 4 \times 23$

Source: Harcourt, Brace, Elementary Math. 5., p. 47, 56 (1)
Merrill, Discovering Math. 5, p. 29.

THE STUDENT WILL SHOW HIS KNOWLEDGE OF THE BASIC PROPERTIES FOR WHOLE NUMBERS BY MATCHING A PRINCIPLE WITH A DEFINITION. 0135

Directions: Place the letter of the definition on the line in front of each principle.

a. you can change the order of addends and the sum is the same
b. any whole number multiplied by one equals that whole number
c. you can change the grouping and the product is the same
d. you can change the order of factors and the product is the same
e. to any whole number add zero, the sum equals that whole number
f. you can change the grouping and the sum is the same
g. you can change the grouping of a subtraction problem and the difference is the same

_e_ 0 principle 2307

_b_ 1 principle 2308

_a_ Communative principle, + 2309

_d_ Communative principle, x 2310

_f_ Associative principle, + 2311

_c_ Associative principle, x 2312

Source: Addison Wesley, page 26.

THE STUDENT WILL APPLY KNOWLEDGE OF THE BASIC PROPERTIES FOR WHOLE NUMBERS BY SELECTING THE PROPERTY IN A GIVEN SITUATION. 0137

Directions: If the equations show the principle stated circle the letter P; if it does not apply to the stated principle circle the letter N.

Which of the following equations show the communative principle?

a. 36 − 29 = 29 − 36   P   *N   2313
b. 28 x 0 = 0   P   *N   2314
c. 21 + 6 = 6 + 21   *P   N   2315
d. 32 x 7 = 7 x 32   *P   N   2316
e. 14 + (8 + 9) = (14 + 8) + 9   P   *N   2317
f. 6 x 8 = 8 x 6   *P   N   2318

Which of the following equations show the associative principle?

a. 34 + (7 + 6) = (34 + 7) + 6   *P   N   2319
b. 8 x (16 x 3) = (8 x 16) x 3   *P   N   2320
c. 17 − (6 − 3) = (17 − 6) − 3   P   *N   2321
d. 14 + 8 = 8 + 14   P   *N   2322
e. 26 + (5 + 9) = (26 + 5) + 9   *P   N   2323
f. 30 − 20 = 20 − 30   P   *N   2324

RATIONAL-IRRATIONAL

THE STUDENT WILL APPLY HIS KNOWLEDGE OF RATIONAL NUMBERS BY SELECTING THE CORRECT ASSUMPTION FROM A PROBLEM SITUATION. 0110

Directions: Read the problem presented and choose the proper assumption.

The sack of candy on the scale weighs 5/16 pound. 2325

a. It weighs more than $\frac{1}{4}$ lb.
*b. It weighs less than $\frac{1}{4}$ lb.
c. It weighs 6 ounces.
d. It weighs 7 ounces.

A cup is 3/4 full. To make it 5/8 full you would 2326

a. do nothing
b. add liquid
*c. take liquid out

The length of a shoe is 13/36 yard. The shoe is 2327

*a. more than 1/3 yard
b. less than 1/3 yard
c. less than a foot
d. equal to 1/3 yard

Joe ran 50 yards in 1/6 of a minute. Tom ran 50 yards in 12/60 of a minute. 2328

a. Joe and Tom took the same time to run the 50 yards.
b. Tom ran faster than Joe.
c. Joe ran slower than Tom.
*d. Joe ran faster than Tom.

The length of a knife A is 5/12 foot. The length of a second knife B is 1/2 foot. 2329

a. knife A is longer than knife B
*b. knife B is longer than knife A
c. knife B is shorter than knife A
d. both knives are the same length

Source: Addison-Wesley Bk. 5, p. 230.

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF RATIONAL NUMBER SIZE BY LISTING FRACTIONS FROM SMALLEST TO LARGEST. 0111

Directions: List the fractions in order from smallest to largest.

h a. 7/2 2330
c b. 4/2 2331
b c. 3/2 2332
d d. 5/2 2333
a e. 8/12 2334
e f. 12/2 2335
g g. 9/2 2336
f h. 1/2 2337

Directions: List the fractions in order from smallest to largest.

g a. 5/6 2338
b b. 1/3 2339
d c. 7/6 2340
a d. 2/3 2341
c e. 5/3 2342

f	f. 4/3	2343
a	g. 0/3	2344

Directions: List the fractions in order from smallest to largest.

h	a. 8/8	2345
f	b. 1/2	2346
g	c. 3/8	2347
c	d. 3/4	2348
b	e. 5/8	2349
e	f. 1/8	2350
d	g. 1/4	2351
a	h. 0/8	2352

Directions: List the fractions in order from smallest to largest.

e	a. 2/3	2353
f	b. 1/2	2354
d	c. 5/6	2355
b	d. 1/3	2356
a	e. 1/6	2357
g	f. 1/4	2358
c	g. 3/4	2359

Source: Addison-Wesley, Bk. 5, p. 235.

THE STUDENT WILL USE HIS KNOWLEDGE OF FRACTIONS IN SELECTING THE RATIONAL AND WHOLE NUMBERS THAT ARE EQUIVALENT. 0112

Directions: Match the whole number with their equivalent rational number.

d	7	a. 12/3	2360
b	5	b. 25/5	2361
e	2	c. 22/2	2362
f	9	d. 28/4	2363
a	4	e. 14/7	2364
i	8	f. 54/6	2365
h	6	g. 24/8	2366
g	3	h. 54/9	2367
		i. 48/6	

Directions: Match the whole number with their equivalent rational number.

e	1	a. 50/12	2368
c	3	b. 7/1	2369
b	7	c. 15/5	2370
h	2	d. 40/10	2371
g	5	e. 7/7	2372
d	4	f. 44/10	2373
		g. 75/15	
		h. 24/12	

Source: Addison-Wesley, Bk. 5, p. 235.

THE STUDENT, APPLYING HIS KNOWLEDGE OF THE ADDITION AND SUBTRACTION OF FRACTIONS, WILL SELECT THE CORRECT SOLUTION FOR WORD PROBLEMS. 0115

Directions: Read the problem and choose the correct answer.

The grapes on a scale weigh 8/10 lb. Another bunch weighing 7/10 lb. was added to them. What was the total weight? 2374

a. 15 oz.
b. 1 lb.
c. 15/20 lb.
*d. 1 1/2 lb.

Larry rode his bike 2 9/10 miles before lunch and 4 2/10 miles after lunch. How far did he ride? 2375

a. 6 11/20 miles
b. 17/10 miles
*c. 7 1/10 miles
d. 7 11/20 miles

Jane and Sue walked to their grandmother's house. It took them 3/4 hour to get there and the same time to get back home. They visited for 3/4 of an hour.

How much time did they spend walking? 2376

a. 1 hr.
*b. 1 1/2 hr.
c. 2 hr.
d. 6/8 hr.

How long were they gone? 2377

a. 2 hr.
*b. 2 1/4 hr.
c. 2 1/2 hr.
d. 3 hrs.

Butter comes in 1/4 lb. sticks.

How much would 10 sticks of butter weigh? 2378

a. 4 lb.
b. 3 1/4 lb.
*c. 2 1/2 lb.
d. 2 lb.

How much would 17 sticks of butter weigh? 2379

*a. 4 1/4 lb.
b. 3 1/2 lb.
c. 3 lb.
d. 2 3/4 lb.

Source: Addison-Wesley Bk. 5, p. 243.

THE STUDENT WILL DEMONSTRATE HIS ABILITY TO RECOGNIZE RATIONAL NUMBER PROBLEMS WHOSE SOLUTION REQUIRES FINDING A COMMON DENOMINATOR FROM THOSE WHICH CAN BE SOLVED AS PRESENTED BY IDENTIFYING THOSE N EEDING COMMON DENOMINATORS. 0116

Directions: In each of the following, one of the four equations cannot be solved unless a common denominator is found. Select that item.

a. $1/2 + 3/2 = n$ 2380
b. $4/5 - 2/5 = n$
*c. $2/3 + 5/6 = n$
d. $1/4 + 3/4 = n$

*a. $3/4 + 1/8 = n$ 2381
b. $3/8 - 2/8 = n$
c. $4/5 + 2/5 = n$
d. $4/7 - 2/7 = n$

a. $6/14 + 8/14 = n$ 2382
*b. $6/9 + 4/7 = n$
c. $5/8 + 3/8 = n$
d. $5/12 - 1/12 = n$

*a. $6/13 = 1/14 = n$ 2383
b. $7/10 - 5/10 = n$
c. $2/8 + 7/8 = n$
d. $5/9 + 3/9 = n$

a. $9/13 + 2/13 = n$ 2384
b. $1/4 + 3/4 = n$
c. $5/7 + 3/7 = n$
*d. $8/9 - 4/19 = n$

a. $7/8 + 5/8 = n$ 2385
*b. $2/3 + 5/6 = n$
c. $12/25 + 6/25 = n$
d. $19/36 + 7/36 = n$

a. $4/9 - 1/9 = n$ 2386
b. $7/13 - 6/13 = n$
*c. $9/25 - 2/5 = n$
d. $5/8 = 5/8 = n$

THE STUDENT WILL DISPLAY HIS ABILITY TO DISTINGUISH BETWEEN FACTS THAT ARE RELEVANT AND FACTS THAT ARE NOT RELEVANT TO THE SOLUTION OF A RATIONAL NUMBER PROBLEM BY CORRECTLY IDENTIFYING THE NON-RELEVANT FACT. 0117

Directions: Choose the fact following the given equation that is nonrelevant to its solution.

$5/6 + 3/4 = n$ 2387

a. $5/6 = 10/12$
*b. $3/4 = 6/8$
c. $3/4 = 9/12$

$1/2 - 1/3 = n$ 2388

*a. $1/2 = 2/4$
b. $1/3 = 2/6$
c. $1/2 = 3/6$

$7/8 + 5/12 = n$ 2389

a. $5/12 = 10/24$
*b. $7/8 = 14/16$
c. $7/8 = 21/24$

$1/8 + 1/4 = n$ 2390

a. $1/8 = 1/8$
*b. $1/4 = 1/4$
c. $1/4 = 2/8$

$1/3 + 1/6 = n$ 2391

a. $1/3 = 2/6$
b. $1/6 = 1/6$
*c. $1/6 = 2/12$

$3/4 - 2/3 = n$ 2392

a. $2/3 = 8/12$
*b. $3/4 = 6/8$
c. $3/4 = 9/12$

1 1/2 - 3/4 = n 2393

a. 1 = 4/4
b. 1/2 = 2/4
*c. 1 = 2/2

6 5/8 + 2 1/4 = n 2394

*a. 6 = 48/8
b. 5/8 = 5/8
c. 1/4 = 2/8

3 1/3 - 1 3/4 = n 2395

a. 1 = 12/12
b. 1/3 = 4/12
*c. 1 = 4/4

9 4/9 - 7 2/3 = n 2396

*a. 1 = 3/3
b. 2/3 = 6/9
c. 1 = 9/9

Source: Addison-Wesley, Bk. 5, p. 245.

THE STUDENT WILL DEMONSTRATE HIS ABILITY TO SOLVE RATIONAL NUMBER PROBLEMS WITH UNCOMMON DENOMINATORS BY SELECTING THE CORRECT ANSWER. 0118

Directions: Choose the correct answer.

5/6 + 1/3 = 2397

a. 6/9
b. 6/6
c. 6/3
*d. 7/6

1/8 + 1/4 = 2398

a. 2/12
b. 2/8
*c. 3/8
d. 1/12

1/2 + 1/3 = 2399

a. 2/5
*b. 5/6
c. 2/6
d. 1/5

5/8 - 1/4 = 2400

a. 4/4
*b. 3/8
c. 4/8
d. 6/12

3/4 - 7/12 = 2401

*a. 1/6
b. 4/8
c. 4/12
d. 2/6

1/8 + 1/3 = 2402

a. 2/11
*b. 11/24
c. 2/24
d. 2/5

7/9 + 1/18 = 2403

a. 8/27
b. 8/18
c. 8/9
*d. 15/18

1/4 + 3/10 = 2404

a. 4/14
b. 4/40
*c. 11/20
d. 12/40

5/8 - 1/12 = 2405

a. 4/4
b. 4/8
c. 7/12
*d. 13/24

Source: Addison-Wesley, Bk. 5, p. 246, 250.

THE STUDENT WILL USE HIS KNOWLEDGE OF ADDITION AND SUBTRACTION OF RATIONAL NUMBERS WITH UNLIKE DENOMINATORS TO SOLVE FRACTION WORD PROBLEMS. 0119

Directions: Read the word problem and choose the correct answer.

Walked 7/10 mile. Ran 1/2 mile. How far altogether? 2406

*a. 1 1/5 mile
b. 8/12 mile
c. 11/10 mile
d. 12/20 mile

3/8 inch of rain. Another 1/4 inch of rain. How much rain? 2407

a. 4/12 inch
b. 4/8 inch
*c. 5/8 inch
d. 11/16 inch

Recipe: 3/4 cup of milk, 2/3 cup of water. How much liquid? 2408

a. 1 1/2 cup
b. 1 1/4 cup
c. 1 1/3 cup
*d. 1 5/12 cup

3/4 yd. of blue material, 5/6 yd. of yellow material. How much more yellow than blue material? 2409

*a. 1/12
b. 1/6
c. 1/4
d. 3/24

5/8 of a picture is pink. 1/6 of the picture is blue. The rest is not colored. What part of the picture is colored? 2410

a. 6/14
b. 14/16
*c. 19/24
d. 35/48

How much more is pink than blue? 2411

a. 7/16
*b. 11/24
c. 25/48
d. 4/14

What part is not colored? 2412

a. 13/48
b. 7/12
c. 11/16
*d. 5/24

Source: Addison-Wesley, Bk. 5, p. 257.

THE STUDENT WILL DEMONSTRATE HIS UNDERSTANDING OF THE THREE BASIC PRINCIPLES OF RATIONAL NUMBER ADDITION BY RECOGNIZING THE DEFINITION OF EACH. 0120

Directions: Choose the correct explanation for each rational number addition principle.

0 principle 2413

a. When you choose a rational number and add 0, the sum is 0.
*b. When you choose a rational number and add 0 the sum is the number you chose.

Commutative principle 2414

a. When you add two rational numbers, the order of the addends affects the sum.
*b. When you add two rational numbers, the order of the addends does not affect the sum.

Associative principle 2415

*a. When you add rational numbers, you can change the grouping and get the same sum.
b. When you add rational numbers, you cannot change the grouping and get the same sum.

THE STUDENT WILL DEMONSTRATE HIS ABILITY TO DRAW INFERENCES BY EVALUATING STATEMENTS BASED ON DEDUCTIONS FROM DECIMAL WORD PROBLEMS. 0128

Directions: Read the decimal word problem and the statements below the problem. If the statement can be assumed true, cross out T; if the statement cannot be assumed true, cross out the U.

Sue went to the grocery store. She spent $7.58 on meat, $2.75 on fresh fruits and vegetables, and $9.24 on other groceries.

Sue eats balanced meals	T	~~U~~	2416
Sue spent more on meat than vegetables.	~~T~~	U	2417
Sue went over her budget.	T	~~U~~	2418
Sue spent $20 on food.	T	~~U~~	2419
Sue received $19.57 worth of S & H stamps.	T	~~U~~	2420

A gallon of pure water weighs 8.345 lb. A gallon of gasoline weighs about 5.675 lb. And a gallon of oil weighs about 7.511 lb.

Water is heavier than gasoline	T	U	2421
Water is heavier than oil	~~T~~	U	2422
Gasoline is heavier than oil.	T	~~U~~	2423
Gasoline is lighter than water.	~~T~~	U	2424
Oil weighs less than gasoline.	T	~~U~~	2425

Oil is lighter than water.	[✓ T]	U	2426
Oil will float on water.	[✓ T]	U	2427
Oil will float on gasoline.	T	[✓ U]	2428
Gasoline will float on oil.	[✓ T]	U	2429
Gasoline will float on water.	[✓ T]	U	2430

THE STUDENT WILL DEMONSTRATE HIS ABILITY TO DRAW CONCLUSIONS ABOUT TIME, RATE AND DISTANCE BY SELECTING THE PROPER CONCLUSION AFTER READING A GIVEN PARAGRAPH. 0129

Directions: Read the paragraph and then decide if the statements following it are true, false, or can't say.

Each of three airplanes travel at the rate of 500 mph if there were no wind. An airplane that has a 40 mph head wind travels only 460 mph. An airplane that has a 40 mph tail wind travels 540 mph.

Planes travel slower with a tail wind. 2431

a. true
*b. false
c. can't say

Planes travel fastest with no wind. 2432

a. true
*b. false
c. can't say

Wind has a definite effect on the speed of airplanes. 2433

*a. true
b. false
c. can't say

On a 2400 mile trip a plane with a head wind leaving before a plane with a tail wind would arrive first. 2434

a. true
b. false
*c. can't say

> The first successful gas-powered car went 9 mph. The Queen Elizabeth, one of the largest ocean liners, usually travels about 32 mph. The longest straight railroad in the world averages 82 mph. Charles Lindbergh averaged about 109 mph in his flight across the Atlantic.

The Queen Elizabeth traveled as far in one day as the first car went in four days. 2435

a. true
*b. false
c. can't say

If Lindbergh races the railroad across the Atlantic he would beat it by 15 hours. 2436

a. true
*b. false
c. can't say

It would take the Queen Elizabeth about 3 times longer to cross the ocean than Lindbergh. 2437

*a. true
b. false
c. can't say

If the gas car had a head start of 24 hours it would take the train 3 hours to catch it. 2438

*a. true
b. false
c. can't say

Source: Addison-Wesley, Book 5, pp. 123-281.

THE STUDENT WILL DEMONSTRATE HIS ABILITY TO DISTINGUISH BETWEEN FACT AND OPINION BY IDENTIFYING EACH. 0130

Directions: Think about the sentence. If it tells a fact cross out the F; if it gives an opinion cross out the O.

F ~~O~~ Arithmetic is difficult. 2439

~~F~~ O 4 pecks equal 1 bushel. 2440

~~F~~ O $a \times b \times c = (a \times b) \times c = a \times (b \times c)$ 2441

F ~~O~~ The use of a compass is harder than a ruler. 2442

~~F~~ O To divide you must know how to multiply. 2443

F ~~O~~ To subtract you must know how to add. 2444

F ~~O~~ All boys dislike arithmetic. 2445

~~F~~ O All rational numbers are fractions. 2446

~~F~~ O It is impossible to write the largest numbers. 2447

~~F~~ O All yardsticks are 36 inches long. 2448

F 0 Zero isn't a good number to use. 2449

F 0 Graphing is fun. 2450

THE STUDENT WILL DEMONSTRATE AN UNDERSTANDING OF THE MULTIPLICATION OF RATIONAL NUMBERS THROUGH THE USE OF THE ASSOCIATIVE PRINCIPLE, BY SELECTING THE CORRECT MISSING NUMBER OF A FRACTIONAL EQUATION. 0240

3/2 x 2/5 = (3 x 1/2) x (2 x 1/5) = a x b = N 2451
If "a" is 6, then "b" is

a. 2/10
*b. 1/10
c. 6/10

4/5 x 2/3 = (4 x 1/5) x (2 x 1/3) = a x b = N 2452
If "b" is 1/15, then "a" is

*a. 8
b. 6
c. 2

3/4 x 5/2 = (3 x 1/4) x (5 x 1/2) = a x b = N 2453
If "a" is 15, then "b" is

*a. 1/8
b. 1/6
c. 1/2

2/7 x 4/3 = (2 x 1/7) x (4 x 1/3) = a x b = N 2454
If "a" is 8, then "b" is

a. 1/10
b. 1/7
*c. 1/21

$3/5 \times 3/2 = (3 \times 1/5) \times (3 \times 1/2) = a \times b = N$ 2455
If "a" is 9, then "b" is

a. 1/5
*b. 1/10
c. 1/7

$4/7 \times 2/5 = (4 \times 1/7) \times (2 \times 1/5) = a \times b = N$ 2456
If "a" = 8, and "b" = 1/35, then N is

*a. 8/35
b. 8 1/5
c. 8 1/35

$4/5 \times 3/8 = (4 \times 1/5) \times (3 \times 1/8) = a \times b = N$ 2457
If "a" = 12, and "b" = 1/40, then N is

*a. 12/40
b. 12 1/40
c. 1 21/40

$5/8 \times 3/2 = (5 \times 1/8) \times (3 \times 1/2) = a \times b = N$ 2458
If "a" = 15, and "b" = 1/16, then N is

a. 15 1/16
b. 15 1/6
*c. 15/16

$5/6 \times 2/3 = (5 \times 1/6) \times (2 \times 1/3) = a \times b = N$ 2459
If "a" = 10 and "b" = 1/18, then N is

a. 10 1/8
*b. 10/18
c. 10 1/18

3/7 x 7/2 = (3 x 1/7) x (7 x 1/2) = a x b = N 2460
If "a" is 21, and "b" = 1/14, then N is

*a. 21/14
b. 21 1/14
c. 21 1/4

Source: Addison-Wesley, Elementary School Math, 5., p. 292.

THE STUDENT WILL APPLY HIS KNOWLEDGE OF THE MULTIPLICATION OF RATIONAL NUMBERS BY IDENTIFYING THE CORRECT PRODUCT TO A GIVEN EQUATION. 0242

3/2 x 2/5 = N. N is 2461

a. 5/7
*b. 6/10
c. 5/10

3/4 x 5/2 = N. N is 2462

a. 8/6
*b. 15/8
c. 8/8

4/7 x 2/5 = N. N is 2463

*a. 8/35
b. 6/35
c. 8/12

5/6 x 2/3 = N. N is 2464

*a. 10/18
b. 7/9
c. 7/18

3/4 x 2/5 = N. N is 2465

a. 6/9
b. 5/9
*c. 6/20

5/6 x 3/8 = N. N is 2466

a. 8/14
b. 8/48
*c. 15/48

3/4 x 5/8 = N. N is 2467

*a. 15/32
b. 8/32
c. 8/12

4/7 x 7/4 = N. N is 2468

a. 11/28
b. 28/11
*c. 28/28

0/7 x 3/8 = N. N is 2469

*a. 0/56
b. 3/56
c. 3/15

5/4 x 3/5 = N. N is 2470

a. 8/20
*b. 15/20
c. 8/9

Source: Addison-Wesley, Elementary School Math 5, p. 293.

SETS

INTRODUCTION

THE STUDENT WILL RECALL THE WORDS RELATED TO SETS OF ANIMALS BY IDENTIFYING THE CORRECT WORD FROM A LIST. 0254

Directions: Put an x in front of the letter of the correct answer.

Which of the following identifies a set of puppies? 2471

___ a. yoke
_x_ b. litter
___ c. flight

Which of the following identifies a set of cattle? 2472

___ a. yoke
___ b. flight
_x_ c. herd

Which of the following identifies a set of fish? 2473

___ a. flock
_x_ b. school
___ c. train

Which of the following identifies a set of camels? 2474

_x_ a. train
___ b. group
___ c. yoke

Which of the following identifies a set of people? 2475

___ a. train
___ b. litter
_x_ c. group

Source: Houghton Mifflin, p. 1.

THE STUDENT WILL RECALL THE WORDS RELATED TO SETS OF ANIMALS BY MATCHING THE CORRECT WORD IN COLUMN I WITH THE IDENTIFYING WORD IN COLUMN II. 0255

Directions: Place the letter from Column I on the line before the identifying word in Column II.

Column I

a. yoke
b. litter
c. drove
d. train
e. flight
f. school

Column II

_d_ camels 2476

___ people 2477

_b_ cats 2478

_f_ fish 2479

_e_ geese 2480

_c_ sheep 2481

___ horses 2482

_a_ oxen 2483

Source: Houghton Mifflin, p. 1.

THE STUDENT WILL DEMONSTRATE HIS COMPREHENSION OF MEMBERS OF A SET BY CORRECTLY IDENTIFYING THE MEMBERS OF A SET FROM A GIVEN LIST. 0256

Directions: Underline the correct answer.

In a classroom the children were seated as follows:

Set 1	Set 2	Set 3	Set 4
Bob	Jane	Sally	Cindy
Joe	Mary	Denise	Joan
Debbie	Bill	Pete	Eric
John	Sue	Laurie	Mike

Which student is NOT a member of Mary's set? 2484

a. Jane
b. Bill
c. Sue
*d. Cindy

Which girl is a member of Pete's set? 2485

a. Joan
b. Debbie
*c. Denise
d. Mary

Which set of girls contains the names of the members of Mike's set? 2486

*a. Cindy and Joan
b. Jane and Sue
c. Denise and Laurie
d. Sue and Mary

Which set of boys is made up of the boys from Debbie's set? 2487

a. Bob, Mike, John
b. Joe, Bill, Eric
c. Mike, Pete, John
*d. John, Bob, Joe

Which set of girls make up the members of Pete's set? 2488

a. Laurie, Debbie, Sue
b. Cindy, Mary, Joan
*c. Denise, Laurie, Sally
d. Jane, Denise, Laurie

Which boy is a member of Sue's set? 2489

a. Pete
b. Eric
c. Bob
*d. Bill

Which set has equal sets of girls and boys? 2490

a. Set 1
b. Set 2
c. Set 3
*d. Set 4

Source: Houghton Mifflin, p. 2.

THE STUDENT WILL DEMONSTRATE HIS COMPREHENSION OF MEMBERS OF A SET BY CORRECTLY IDENTIFYING THE DESCRIPTION OF THE MEMBERS OF GIVEN SET. 0257

Directions: Place the letter of the set in Column I on the line before the correct description in Column II.

Column I

a. Jane, Sue, Ellen
b. ounce, pound, ton
c. horses, cows, goats
d. 0,2,4,6,8
e. man, woman, child
f. breakfast, lunch, dinner
g. penny, nickel, dime, quarter, half-dollar
h. apple, orange, banana
i. V, W, X, Y, Z
j. summer, winter, fall, spring
k. Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday
l. l, m, n, o, p

Column II

_d_ the first five even whole numbers 2491
_l_ the middle letters of the alphabet 2492
___ the holiday season 2493
_k_ the days of the week 2494
___ the first five prime numbers 2495
_j_ the seasons of the year 2496
___ the unit of time measurement 2497
_g_ the coins of the U.S.A. 2498

e a group of people 2499

i the last five letters of the alphabet 2500

b the units of weight measurement 2501

f the meals of the day 2502

___ pieces of vegetables 2503

a a group of girls 2504

c a herd of animals 2505

___ the first five cardinal numbers 2506

h pieces of fruit 2507

___ a daily task 2508

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF BASIC SET NOTATIONS BY SELECTING THE CORRECT NOTATION FOR A GIVEN TERM. 0139

Directions: Using the information provided circle the letter that answers each question.

Given: $A = \{1,3,5,7,9\}$ and $B = \{1,3,6,9\}$, 2509

$A \cap B =$

a. $\{1,3,5,6,7,9\}$
b. $\{\ \}$
c. $\{1,3,6,9\}$
*d. $\{1,3,9\}$

Given: $A = \{1,3,5,7,9\}$ and $B = \{1,3,6,9\}$, 2510

$A \cup B =$

*a. $\{1,3,5,7,9\}$
b. $\{\ \}$
c. $\{1,3,5,7,9\}$
d. $\{1,3,9\}$

Given: $A = \{1,3,5,7,9\}$ and $B = \{2,4,6,8,10\}$ 2511

$A \cup B =$

a. $\{1,3,5,7,9\}$
*b. $\{1,2,3,4,5,6,7,8,9,10\}$
c. $\{\ \}$
d. $\{2,4,6,8,10\}$

Given: $A = \{1,3,5,7,9\}$ and $B = \{2,4,6,8,10\}$ 2512

$A \cap B =$

a. $\{1,3,5,7,9\}$
b. $\{2,4,6,8,10\}$
*c. $\{\ \}$
d. $\{1,2,3,4,5,6,7,8,10\}$

CARDINAL NUMBER

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF CARDINAL NUMBERS BY GIVING A CARDINAL NUMBER FOR ANY GIVEN SET OR GIVING A SET FOR A GIVEN CARDINAL NUMBER. 0020

The cardinal number of set A is: 2513

A = dog, cat, bird

*a. n(A) = 3
b. n(A) = 4
c. n(A) = 6
d. n(A) = 2
e. n(A) = 5

n(A) = 4. Which of the following are the elements of set A? 2514

a. 1, 2, 4, 8, 10
*b. w, x, y, z
c. rose, violet, daisy, peony, lily, zinnia
d. horse, cow, sheep, pig, chicken, duck
e. b, c, d, f, g, h, j, k

THE STUDENT CAN APPLY ARITHMETIC METHODS TO ILLUSTRATE THE CONCEPT THAT EVERY SET CAN BE REPRESENTED BY A CARDINAL NUMBER. 0077

$B = \{1, 2, 3, 5, 7\}$ $C = \{1, 2, 4, 6, 8, 10, 12\}$ 2515

The cardinal number of set B is how much more or less than set C?

a. 0
b. 1
*c. 2
d. 3
e. 4

EMPTY

THE STUDENT DEMONSTRATES KNOWLEDGE OF EMPTY SETS BY CHOOSING ITS SYMBOLIC REPRESENTATION AND ITS RELATIONSHIP TO ALL OTHER SETS. 0026

Which of the following is an empty set? 2518

a. {a, e, i, o, u}
*b. { }
c. {0}
d. {1..... 100}
e. {u, f, o}

A = {1, 3, 5, 7}   B = {2, 4, 6, 8 .....} 2519

The union of sets A & B are counting numbers. If Set A intersects Set B, the intersection is:

a. {1, 2, 3}
b. {4, 5, 6, 7}
*c. { }
d. {45, 46, 47}
e. {.....}

If we list the subsets of set A, which of these is NOT a subset of A. 2520

$A = \{$ ●, ▲, ⊂, ▬ $\}$

a. { ● }

b. { ▲, ▬ }

c. { ⊂, ● }

d. { }

*e. { ▼, ▲ }

$A = \{a, c, d\}$ $B = \{e, f, g\}$ $C = \{c, o, m\}$ 2521

One of the following is NOT an empty set.

a. $B \cap C$

*b. $A \wedge C$

c. { }

d. $\emptyset$

e. $A \cap B$

Two sets whose intersection is an empty set are disjoint sets.

A = { days of the week }
B = { months of the year }
C = { words beginning with J }

Which of the following symbolizes disjoint sets: 2522

*a. $A \cap C$
b. $A \cup B$
c. $A \cup C$
d. $B \cap C$
e. $C \cap B$

$A = \{\text{Sam}\}$ $D = \{\text{Tom, Bill}\}$

$B = \{\text{Tom}\}$ $E = \{\text{Sam, Tom, Bill}\}$

$C = \{\text{Sam, Bill}\}$ $F = \{\text{Bill}\}$

All sets can be joined in several ways. One of these is NOT true. 2523

a. $E - A = D$
b. $D - B = F$
c. $B \quad C = E$
*d. $D - \quad A \quad B \quad = F$
e. $E - F = A \quad B$

EQUAL-EQUIVALENT

THE STUDENT DEMONSTRATES KNOWLEDGE OF EQUIVALENCE BY STATING THAT TWO OR MORE SETS ARE EQUIVALENT IF N FOR THE SETS ARE EQUAL. 0021

Match the following equivalent sets by placing the letter from Column II in front of number of Column I.

Column I	Column II	
c {dog, cat, rat, mouse}	a. {table, chair, rug}	2524
d {3, 5, 7, 9, 11, 13, 15}	b. {1, 2, 4, 6, 8}	2525
a { ○ ▼ ■ }	c. { ■ ▼ ○ ■ }	2526
b { \\\\\\ }	d. {a, b, c, d, e, f, g}	2527
	e. {a, e, i, o, u, y}	

A = { ◆, ●, ▲, ▼, ■ }
Which of the following sets is equivalent to A? 2528

a. {oak, elm, maple}
b. {months of the year}
*c. {vowels}
d. {8, 0, 4, 2}

A = {a, b, c, d, e}   B = {1, 2, 3, 4, 5}
Which of the following is not correct? 2529

a. $5 + 5 = n(A \quad B)$
b. $n(A) = n(B)$
*c. $n(A) = 10$
d. $10 = n(A) + n(B)$
e. $10 - (n(A)) = n(B)$

A = {a, b, c, d, e}   B = {1, 2, 3, 4, 5}
Which of the following symbols correctly shows the relationship between sets A and B? 2530

a. $\neq$
b. $\not\approx$
c. $>$
*d. $\approx$
e. $<$

THE STUDENT KNOWS IF THERE IS ONE TO ONE CORRESPONDENCE BETWEEN THE MEMBERS OF 2 SETS, THE SETS ARE EQUAL ONLY IF THE 2 SETS CONTAIN THE SAME MEMBERS AND THEY ARE EQUIVALENT IF ELEMENTS ARE DIFFERENT BY NAMING GIVEN PAIRS OF SETS AS EQUAL OR EQUIVALENT. 0027

$A = \{1,2,3,4,5\}$

$B = \{a,b,c,d,e\}$

These sets are: 2531

a. $=$

*b. $\approx$

c. $\neq$

d. $\not\approx$

e. $A < B$

f. $A > B$

g. $A = B$

$A = \{a,e,i,o,u\}$ B $\{$sink, stove, spoon, strainer$\}$ 2532

One of the following is NOT true about sets A & B:

a. $A \cup B = 9$

b. $A \cap B = \{\ \}$

*c. $A \cap B = 5 - 4$

d. $5 + 4 = n(A \cup B)$

e. $n(A) - n(B) = 1$

f. $A \neq B$

g. $A \not\approx B$

A = hour numbers on a clock

B = counting numbers through 12

Which statemen ts are true about sets A & B 2533

a. $A \neq B$
b. $A \cup B = 12$
c. $A \cap B = 24$
d. $A \ncong B$
*e. $n(A) = n(B)$

Two equal sets each have four members. Their union is a set that has _________ members. 2534

a. 8
b. 0
*c. 4
d. 6
e. 1

Two sets each having the same number of members but different members. Their union is expressed by: 2535

*a. $A \approx B$
b. $A = B$
c. $A \cup B = 8$
d. $A \cup B = n(A) - n(B)$
e. $A \ncong B$

THE STUDENT, APPLYING HIS KNOWLEDGE OF HOW EQUIVALENT SETS ARE BUILT, WILL SELECT THE FIRST FRACTION IN A SET. 0100

Directions: Choose the letter of the fraction necessary to begin the set.

e [___, 2/4, 3/6, 4/8, ...]	a. 4/3	2536
b [___, 6/16, 9/24, 12/32, ...]	b. 3/8	2537
g [___, 2/10, 3/15, 4/20, ...]	c. 3/2	2538
a [___, 8/6, 12/9, 16/12, ...]	d. 1/10	2539
d [___, 2/20, 3/30, 4/40, ...]	e. 1/2	2540
	f. 2/5	
	g. 1/5	

Directions: Choose the letter of the fraction necessary to begin the set.

f [___, ... 5/5, 6/6, 7/7, ...]	a. 1/2	2541
c [___, ... 28/32, 35/40, 42/48, ...]	b. 0/0	2542
g [___, ... 9/27, 10/30, 11/33, ...]	c. 7/8	2543
d [___, ... 5/35, 6/42, 7/49, ...]	d. 1/7	2544
e [___, ... 0/8, 0/9, 0/10, ...]	e. 0/1	2545
	f. 1/1	
	g. 1/3	

Source: Addison-Wesley, Bk. 5, p. 207.

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF EQUAL SETS BY CHOOSING EQUAL SETS FROM A GIVEN LIST. 0258

Directions: Underline the correct equal set.

Tom, Dick, Harry 2546

a. Tom, Dick, Joe
*b. Harry, Tom, Dick
c. Tom, Don, Harry

horse, cow, goat 2547

*a. cow, horse, goat
b. horse, pig, cow
c. goat, cow, sheep

1,2,3,4 2548

a. 3,1,5,4
b. 2,4,6,8
*c. 3,2,4,1

210, 410, 510 2549

a. 210, 310, 410
*b. 410, 510, 210
c. 510, 410, 110

glass, dish, bread 2550

a. dish, spoon, bread
b. cup, dish, spoon
*c. dish, bread, glass

dog, cat, car, bicycle 2551

*a. cat, car, dog, bicycle
b. cat, dog, bicycle, train
c. bicycle, cat, train, car

a b c 2552

a. b c c
*b. c b a
c. d a c

5, 4, 3, 2, 1 2553

a. 5, 4, 1, 6, 4
b. 0, 2, 4,6, 8
*c. 3, 1, 5, 4, 2

skirt, blouse, shoes 2554

a. blouse, pants, skirt
*b. shoes, skirt, blouse
c. skirt, tie, shoes

brush, comb, hair 2555

*a. comb, hair, brush
b. curler, hair, brush
c. shampoo, hair, brush

Source: Houghton Mifflin, p. 1 & 2.

SUBSETS AND SUPERSETS

THE STUDENT DEMONSTRATES KNOWLEDGE OF SETS BY INDICATING WHETHER GIVEN SETS ARE SUBSETS, UNIVERSAL SETS OR SUPERSETS. 0028

$A = \{1, 2, 3, 4\}$

The relationship of the Element ($\in$) to set A can be shown in different ways. One of these is NOT correct. 2556

a. $1 \in \{A\}$
b. $1 \in \{1, 2, 3, 4\}$
*c. $\{1\} \supset A$
d. $\{1\} \subset A$
e. $A \subset \{1\}$
f. $\{1, 2, 3, 4\} - \{1\} = \{2, 3, 4\}$
g. $\{1\} \cup \{2, 3, 4\} = A$

The Universal sets in Column I can be paired with the sets in Column II. Mark the letter of the proper set in front of the number of its universal set.

	Column I	Column II	
b	U = airplanes	a. $\{a, b, c, d, e, f, g\}$	2557
e	U = counting numbers	b. $\{\text{jet}\}$	2558
a	U = notes of a musical scale	c. $\{\ \}$	2559
c	U = boys who jump 20 ft. high	d. $\{\text{planets, asteroids, stars, moons}\}$	2560
d	U = celestial bodies	e. $\{1, 2, 3, 4, 5, 6\}$	2561
		f. $\{0, 1, 2, 3 \ldots\}$	

The element 7 is a subset of the counting numbers greater than 5 and less than 10. Which does not express this? 2562

a. $\{7\} \subset \{6, 7, 8, 9\}$
b. $\{7\} \cup \{6, 8, 9\} = \{6, 7, 8, 9\}$
c. $7 \in \{6, 7, 8, 9\}$
*d. $\{7\} > \{6, 7, 8, 9\}$
e. $\{6, 7, 8, 9\} \supset \{7\}$

U = {0,1,2,3,4,5,6} 2563

Which of the following is Not a subset of U :

- a. { }
- b. {counting numbers to 6}
- c. {first 3 odd numbers}
- * d. {even numbers less than 5}
- e. {0}

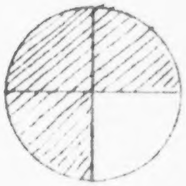
THE STUDENT CAN DEMONSTRATE KNOWLEDGE OF SUBSETS BY JOINING SUBSETS OF A SET TO NAME A NEW SUBSET OF THAT SET OR IF HE KNOWS THE NUMBER OF EQUIVALENT SUBSETS BEING JOINED HE CAN MULTIPLY TO FIND THE NEW SUBSET. 0065

{▲ ▲ ▲ ▲ ▲} {△}, {△}

A new subset would be {△,△} found by 2564

- a. 1/4 + 1/4 = 2/4
- *b. 1/5 + 1/5 = 2/5
- c. 5/5 - 2/5 = 3/5
- d. 2/5 + 5/5 = 7/5

The best expression for the area of the shaded portion of the circle is ______________ 2565



- a. 1/4
- *b. 3 x 1/4
- c. 3 x 4/1
- d. 3/3

The numerator of the new fraction for 4 x 1/5 is 2566

- a. 5
- *b. 4
- c. 3
- d. 1

The new fraction for 6 x 1/7 is 2567

*a. 6/7
b. 5/7
c. 7/7
d. 1/7

5 x 1/10 is 2568

a. one-fifth
b. four tenths
*c. five-tenths
d. one-tenth
e. six-tenths

If 1/6 + 1/6 + 1/6 = n, then n is 2569

a. one-sixth
*b. three-sixths
c. six-sixths

THE STUDENT WILL APPLY HIS KNOWLEDGE OF SUBSETS BY CHOOSING THE CORRECT SUBSET THAT IS LOCATED WITHIN A GIVEN SET. 0268

Directions: Circle the correct subset for each example.

U = [all the boys of the world] 2570

a. = [Jane and Sue]
*b. = [Joe and Mike]
c. = [Joe and Jane]

U = [all the even numbers] 2571

a. = [1,2,3,4]
b. = [1,3,5,7]
*c. = [2,4,10,12]

U = [all the animals of the world] 2572

*a. = [cat,dog,mouse]
b. = [tomatoe, giraffe, camel]
c. = [giraffe, towel, kitten]

U = [all the fruits of the world 2573

a. = [oranges, elms, bananas]
b. = [apple, peach, corn]
*c. = [grapes, oranges, lemons]

U = [all the trees of the world] 2574

a. = [cotton, maple, corn]
*b. = [maple, elm, fir]
c. = [redwood, cucumber, birch]

U = [all the girls of the world] 2575

*a. = [Jane, Jeanne, Joyce]
b. = [Mary, Bob, Betty]
c. = [Marya, Mark, Marie]

U = [all the vegetables of the world] 2576

a. = [tomatoe, potatoe, lemon]
b. = [peas, orange, lettuce]
*c. = [corn, beans, radishes]

U = [all of the religions in the world] 2577

a. = [Catholic, Chinese, Moslem]
*b. = [Protestant, Catholic, Baptist]
c. = [Spanish, German, Irish]

U = [all of the prime numbers] 2578

a. = [0,1,3,5]
b. = [6,7,8,9]
*c. = [3,5,7,11]

U = [all of the even numbers] 2579

*a. = [0,12,16,8]
b. = [1,2,3,4]
c. = [3,5,7,11]

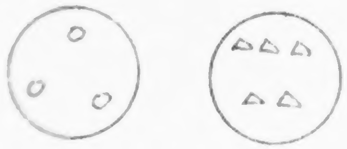
Source: Houghton Mifflin, p. 27.

OPERATIONS

THE STUDENT DEMONSTRATES KNOWLEDGE OF ADDITION IN TERMS OF SETS BY SELECTING IT FROM A LIST. 0038

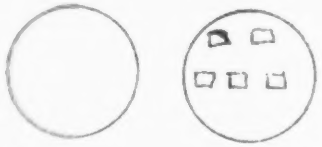
The subsets are being joined. Which equation correctly names the cardinal numbers. 2580

a. $2 + 4 = 6$
b. $3 + 4 = 7$
c. $2 + 5 = 7$
*d. $3 + 5 = 8$
e. $4 + 5 = 9$



The subsets are being joined. Which is the correct numerical equation for this union. 2581

*a. $0 + 5 = 5$
b. $0 + 6 = 6$
c. $5 + 5 = 5$
d. $0 = 4 + 0$
e. $0 = 5 + 9$



THE STUDENT DEMONSTRATES THAT HE KNOWS THAT THE UNION ($\cup$) OF 2 OR MORE SETS IS A NEW SET CONTAINING ALL ELEMENTS OF THE JOINING SETS AND COMMON ELEMENTS ARE ONLY LISTED ONCE BY SELECTING THE CORRECT REPRESENTATION OF A UNION. 0025

$A = \{0, 2, 4, 6, 8\}$ $B = \{1, 3, 5, 6, 7\}$

The union of sets A & B will contain 2582

a. $\cup = \{2, 3, 4, 5, 6, 7\}$
b. $\cup = \{1, 2, 3, 4, 5, 6, 7, 8\}$
c. $\cup = \{0, 2, 3, 4, 5, 8\}$
*d. $\cup = \{0, 1, 2, 3, 4, 5, 6, 7, 8\}$
e. $\cup = \{$counting numbers to 8$\}$

$A = \{a, e, o\}$ $B = \{b, c, d\}$ 2583

The $\cup$ of sets A and B is:

*a. $\{a, e, o, b, c, d\}$
b. $\{b, a, d\}$
c. $\{c, o, b\}$
d. $\{b, a, d, e, o\}$
e. $\{a, e, o, b, d\}$

A = {chair, table, lamp} B = {lamp, rug, bed} 2584

The $\cup$ of A and B is

a. {chair, table, rug, bed}
b. {chair, table, lamp, lamp, rug, bed}
*c. {chair, rug, bed, lamp table}
d. {bed, chair, table, rug}
e. {lamp}

$A \cup B$ = {Al, Ann, Amos, Andy} 2585

Set A and Set B could be represented by:

a. A = {Al} B = {Al, Amos, Ann}
*b. A = {Ann, Amos, Al} B = {Al, Amos, Andy}
c. A = {Al, Andy} B = {Ann, Andy, Al}
d. A = {Al, Ann, Amos} B = { }
e. A = {Al, Ann, Andy} B = {Ann, Andy}

$A \cup B = \{0, 1, 2, 3, 4, \ldots\ldots\}$

One of the following is NOT true of sets A, B, or the A B 2586

*a. $A \cup B$ = {counting numbers}
b. $A \cup B$ = {the whole numbers}
c. A = {even numbers}
d. B = {numbers divisible by two}
e. A = {odd numbers}

THE STUDENT WILL APPLY HIS KNOWLEDGE OF THE UNION OF SETS BY IDENTIFYING THE CORRECT NEW SET FROM A GIVEN EXAMPLE. 0259

Directions: Put an x in front of the correct G set.

E = (Jane, Sue, Mary) 2587
F = (Joe, Tom, Ed)

If $E \cap F = G$

a. G = (Jane, Sue, Mary, Tom, Joe, Bill)
b. G = (Jane, Tom, Sue, Mary, Bill, Ed)
*c. G = (Tom, Ed, Mary, Sue, Joe, Jane)

E = (car, bus, bicycle, scooter) 2588
F = (boat, train, car, bus)

If $E \cap F = G$

a. G = (train, bicycle, scooter, car, bus)
*b. G = (bicycle, car, scooter, train, boat, bus)
c. G = (bicycle, scooter, boat, train)

E = (o, 5, 10, 15, 20, 25) 2589
F = (0, 10, 20, 30, 40, 50, 60)

If $E \cap F = G$

a. G = (60, 50, 40, 30, 10, 0)
b. G = (0, 5, 15, 25, 30, 40, 50, 60, 0)
*c. G = 40, 50, 60, 0, 5, 10, 15, 30, 25, 20)

E = (13, 3, 11, 5, 17, 7) 2590
F = (14, 2, 12, 4, 10, 6)

If $E \cap F = G$

a. G = (12, 3, 4, 0, 17, 15, 13, 9, 8, 10
*b. G = (4, 5, 6, 7, 13, 15, 17, 3, 2, 11, 12, 10)
c. G = (2, 3, 4, 13, 15, 17, 9, 10, 7, 8, 12, 6)

E = (red, purple, pink) 2591
F = (blue, pink, yellow)

If E $\cap$ F = G

a. G = (pink, purple, blue, red, pink)
*b. G = (purple, yellow, pink, red, blue)
c. G = (yellow, purple, red, blue, purple)

E = (□, △, ⊗, ▭) 2592
F = (⊖, ⊡, ×, ⊗)

If F $\cap$ E = G

a. G = (△, □, ⊗, ⊡, ⊖, ▭, G, ×)
b. G = (×, □, ⊖, ⊡, ⊗ ⊖, ▭, △)
*c. G = (⊗, ⊡, ×, □, ⊖, △, ▭)

E = (skirt, blouse, slip, shoes) 2593
F = (pants, shirt, shoes, tie)

If E $\cap$ F = G

*a. G = (blouse, shoes, shirt, skirt, slip, tie, pants)
b. G = (skirt, shirt, shoes, slip, shoes, pants, blouse)
c. G = (pants, blouse, tie, shirt, skirt, slip, socks)

E = 1,2,3,4,5 2594
F = 2,3,4,5,6,7

If E $\cap$ F = G

a. G = 1,6,7
b. G = 7,6,5,4,2
*c. G = 7,6,5,4,3,2,1

E = (Kirk, Cindy, Sue, Kent) 2595
F = (Denise, Keith, Kirk, Nancy)

If $E \cap F = G$

a. G = (Kirk, Kent, Keith, Kerry)
*b. G = (Denise, Cindy, Sue, Nancy, Kent, Kirk, Keith)
c. G = (Cindy, Sue, Denise, Nancy)

E = (s + u) 2596
F = (a b c d e)

If $E \cap F = G$

*a. G = (a, b, c, s) + (u, d, e)
b. G = (a b c d e s t u)
c. G = (u, t, s, d, v, c, a, e)

Source: Houghton Mifflin, p. 8.

THE STUDENT CAN APPLY THE DEFINITION OF INTERSECTION OF SETS TO SOLVE A SITUATION WHERE ALL INFORMATION OR THE CONCLUSION IS NOT GIVEN. 0031

"Y" is an element in Set A. Set A does not intersect Set B. We therefore know Set B, 2597

a. has many members
*b. has no members in common with set A.
c. is larger than Set A.
d. Union Set A has twice as many members as Set A.

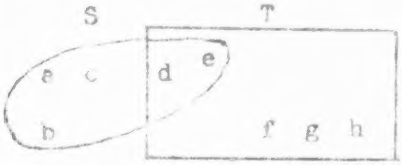
There are 25 boys and girls in Room 7 of Marshall School. Jane is the only member of her class in Girl Scouts. Sue and Jane are secretary and treasurer of the Science Club of 15 class members. Bob is president of the class and the Science Club. Sam doesn't like clubs. The intersection of all these sets would be: 2598

a. Sam
*b. Jane
c. Bill
d. Jane and Sue
e. Jane, Sue and Bill

Source: Modern School of Math 4, Houghton-Mifflin, pg. 100-103
Modern School of Math 5, pgs. 100-101, 134, 139
Modern School of Math 6, pgs. 8-9, 42

THE STUDENT WILL APPLY HIS KNOWLEDGE OF THE UNION AND INTERSECTION OF SETS BY IDENTIFYING THE UNION AND INTERSECTION OF GIVEN SETS. 0085

Directions: Given two sets, answer the question by circling the letter of the correct answer.

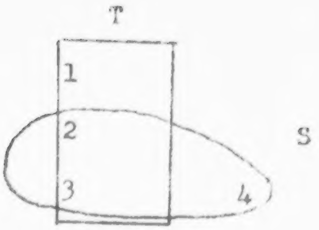


What identifies $S \cup T$? 2599

a. d,e,f,g,h
b. a,b,c,f,g,h
c. a,b,c,d,e,f
*d. a,b,c,d,e,f,g,h

What identifies $S \cap T$? 2600

a. a,b,c,d,e,f,g,h
b. a,b,c
*c. d,e
d. f,g,h

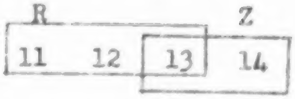


What identifies $T \cap S$? 2601

a. 1,2,3,4
b. 2,3,4
c. 1,2,3
*d. 2,3

What identifies $S \cup T$? 2602

*a. 1, 2, 3, 4
b. 2, 3, 4
c. 1, 2, 3
d. 2, 3



What identifies $Z \cup R$? 2603

a. 11, 12, 13
b. 13, 14
*c. 11, 12, 13, 14
d. 12, 13, 14

What identifies $R \cap Z$? 2604

a. 11, 12, 13
*b. 13
c. 13, 14
d. 11, 12, 13, 14

Source: Addison-Wesley, pp. 174-175.

THE STUDENT CAN DEMONSTRATE KNOWLEDGE OF CROSS PRODUCT BY STATING THAT THE CROSS PRODUCT (OR CARTESIAL SET) IS THE MATCHING OF ALL MEMBERS OF ONE SET WITH ALL MEMBERS OF ANOTHER. 0078

Given the sets A and B, 2605

$A = \{1,2,3\}$
$B = \{a,b\}$

the total number of cross products of sets A and B is:

a. 2
b. 4
*c. 6
d. 8
e. 10

Given the sets A and B, where 2606

$A = \{1,3\}$
$B = \{a,b,c\}$

which of the following is NOT a cross product of sets A and B?

a. (a,1)
*b. (a,b)
c. (a,3)
d. (b,3)
e. (c,1)

THE STUDENT RECALLS CROSS PRODUCT NOTATION BY SELECTING IT FROM A LIST. 0032

Which of the following statements asks you to find the cross products: 2607

a. $A \cup B$
b. $A \cap B$
c. $A = B$
*d. $A \times B$
e. $A \approx B$

THE STUDENT APPLIES THE CONCEPT OF CROSS PRODUCTS OF 2 SETS TO SOLVE A PROBLEM USING ARITHMETIC METHODS. 0033

There are 6 cross-products of Set A and Set B. Which of the following would be the possible sets. 2608

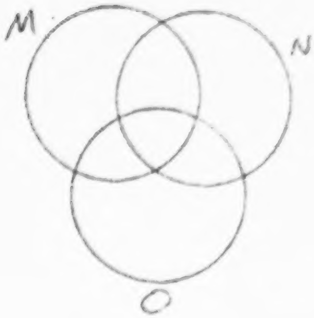
a. A = {1,2} B = {3}
*b. A = {a,b} B = {1,2,3}
c. A = {6} B = { }
d. A = {a} B = {1,2,3,4,5}

Your mother has baked a cherry, an apple, and a plum pie. She has four kinds of ice cream, vanilla, chocolate, strawberry, fudge ripple. The number of different combinations would be: 2609

a. 2
b. 3
c. 4
d. 6
*e. 12

VENN DIAGRAMS

THE STUDENT DEMONSTRATES KNOWLEDGE OF VENN DIAGRAMS BY EXPRESSING UNION AND INTERSECTION OF SETS IN TERMS OF SUCH DIAGRAMS. 0029

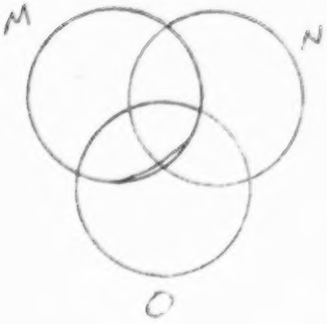


2610

M = {4,5}
N = {5,6}
O = {3,5,7}

M ∪ N ∪ O =

a. {5}
b. {3,4,5}
c. {4,5,6}
*d. {3,4,5,6,7}
e. {4,5,6,3,5,7}

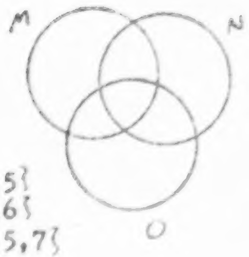


2611

M = {4,5}
N = {5,6}
O = {3,5,7}

M ∩ N ∩ O =

a. {3,4,5}
b. {4,5}
*c. {5}
d. {3,5,7}
e. {3,4,5,6,7}

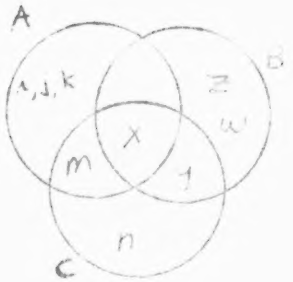


M = {4,5}
N = {5,6}
O = {3,5,7}

2612

Using the Venn diagram which of the following is true

a. M − N = O
*b. n(O) − n(M) = 1
c. N<M
d. M = N
e. O ≈ M



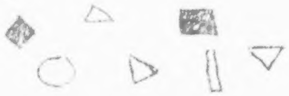
A = {children who have brown eyes} 2613
B = {children with red hair}
C = {children with freckles}

One of the following does NOT name the set of children with red hair, brown eyes, that have freckles

a. $A \cap B \cap C$
b. $\{x\}$
*c. $\{m, x, y\}$
d. $A - \{i, j, k, m\}$
e. $B \cap C - \{y\}$

THE STUDENT WILL APPLY HIS KNOWLEDGE OF FRACTIONS AND SETS TO TRANSLATE SETS INTO FIGURES. 0095

Directions: Choose the correct answer after examining the set of figures.



What fraction of the figures are shaded? 2614

a. 5/7
*b. 2/7
c. 2/5

What fraction of the figures are triangles? 2615

a. 4/7
*b. 3/7
c. 3/5

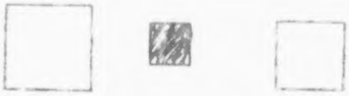
What fraction of the figures are not triangles? 2616

*a. 4/7
b. 3/7
c. 3/5

What fraction of the set is one figure? 2617

a. 1/2
b. 1/5
*c. 1/7

Directions: Choose the correct answer after examining the set of figures.



What fraction of the figures are shaded? 2618

*a. 1/3
b. 2/3
c. 3/3

What fraction of the figures are squares? 2619

a. 1/3
b. 2/3
*c. 3/3

What fraction of the figures are not larger than another? 2620

a. 0/3
*b. 1/3
c. 2/3

What fraction of the figures are not shaded? 2621

a. 1/3
*b. 2/3
c. 3/3

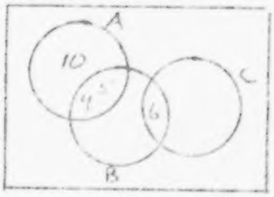
Source: Addison-Wesley, Bk. 5, pp. 188.

GIVEN SPECIFIC DATA, THE STUDENT WILL APPLY HIS KNOWLEDGE OF SETS BY SELECTING A VENN DIAGRAM THAT ACCURATELY USES INFORMATION PROVIDED. 0138

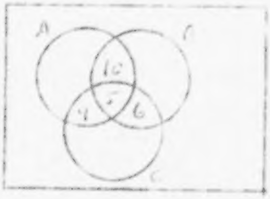
Directions: Circle the letter of the diagram that uses all the given information.

Given: $A = \{5,9,10\}$, $A \cap C = \{5,9\}$, $B \cap C = \{5,6\}$ 2622

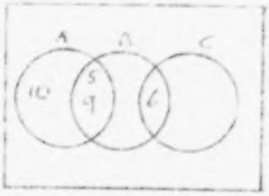
a.



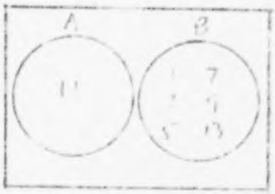
*b.



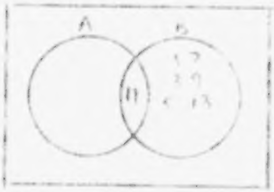
c.



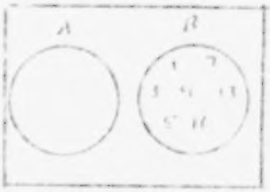
Given: $A \cup B = \{1,3,5,7,9,11,13\}$, $B = \{1,3,5,7,9,13\}$ 2623


A
B
11
1
7
3
9
5
13

* a


A
B
11
1 7
3 9
5 13

b


A
B
1
7
3
5
13
5
11

c

ADVANCED TOPICS

LOGARITHMS AND EXPONENTIALS

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF COMPUTATIONAL SEQUENCE TO SOLVE A GIVEN MATHEMATICAL RELATIONSHIP INVOLVING AT LEAST THREE DIFFERENT OPERATIONS, SUCH AS MULTIPLYING, DIVIDING, RAISING TO A POWER OF, EXTRACTING A ROOT. 0019

The logarithmic value of the expression $\frac{1560 \times 788}{503}$ is 1978

a. 10.7912
b. 3.7388
*c. 4.7388
d. 9.7912

The numerical value of the expression $\frac{1560 \times 788}{503}$, determined using logarithms and the anti-logarithms. 1979

*a. 5.48×10^4
b. 6.18×10^{10}
c. 5.48×10^3
d. 6.18×10^9

Source: Terms, Tables & Skills, CA5
Bobbie J. Woodruff, p. 148-149.

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF THE RELATION BETWEEN LOGS AND EXPONENTS BY TRANSLATING THE EXPONENT OF A NUMBER EXPRESSED IN SCIENTIFIC NOTATION TO THE CHARACTERISTIC OF THE LOGARITHM OF THAT NUMBER. 0012

The characteristics of the logarithms of the numbers (base 10) 1560 and 788, in this order are 2624

a. 1 and 1
*b. 3 and 2
c. 1 and 2
d. 2 and 3

The characteristics of the logarithms of the numbers (to the base ten) 0.104 and 0.00398 are 2625

a. $\bar{1}$ and 2
b. 1 and $\bar{3}$
c. $\bar{2}$ and 3
*d. $\bar{1}$ and $\bar{3}$

The Characteristics of the logarithm of the numbers (base 10) 0.104 and 0.00398 may be written as 2625

a. 9.____ -10 and 3
b. 1 and 7.___ -10
c. 8.___-10 and 3
*d. 9.___-10 and 7.___-10

Source: Terms, Tables, and Skills, Ch. 5.

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF THE LOG TABLE BY DETERMINING THE FRACTIONAL PORTION OF AN EXPONENT USED TO EXPRESS THE POWER OF TEN IN ANY GIVEN NUMBER, WHICH LIES BETWEEN TWO SUCCESSIVE NUMBERS WHICH ARE EVEN POWERS OF TEN, BY USING A TABLE OF MANTISSAS SHOWN ON A LOGARITHM TABLE. 0014

The fractional portion of the exponent of the numbers 123, which is between 100 and 1000, would be 2627

a. .0531
*b. .0899
c. .3636

Source: Terms, Tables, and Skills, Silver Burdett

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF A LOG TABLE BY LOCATING THE MANTISSA OF THE LOGARITHM OF ANY THREE PLACE NUMBER (TO BASE 10) IN A LOGARITHM TABLE. 0015

Directions: Using the log table in the back of your book, determine the mantissas for the following numbers. (Circle the correct answer.)

1560 and 788 2628

a. .1931 and .8354
b. .1761 and .8965
*c. .1931 and .8965
d. .1761 and .8354

0.104 and 0.00398 2629

*a. .0170 and .5999
b. .0374 and .5979
c. .0170 and .5416
d. .0212 and .5999

Source: Terms, Tables, Skills, Ch. 5 and p. 446,
Robbie J. Woodruff
Silver Burdett and Co.

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF LOGARITHMS BY WRITING THE COMPLETE LOGARITHM OF ANY THREE PLACE NUMBER TO THE BASE 10. 0016

Directions: The complete logarithms of the following numbers are listed in the adjoining tables. Circle the correct answer.

1500 and 7[illegible] 2630

a. 1.[illegible] and [illegible]
b. 3.1[illegible] and [illegible]
*c. 3.1[illegible] and 2.8[illegible]
d. 2.1[illegible] and 0.6654

[illegible] and 0.00[illegible] 2631

a. 0.0[illegible] and 0.5999
*b. 1.0170 and 3.5999
c. 1.0170 and 3.[illegible]9
d. 1.0[illegible] and 3.5999

Source: Turner, [illegible], Skills [illegible] p. [illegible]
[illegible], Silver Burdett, 1966.

[illegible] THE STUDENT CAN DEMONSTRATE THE PROCESS OF USING LOGARITHMIC PRODUCT AND QUOTIENTS TO DETERMINE THE LOGARITHM PRODUCT OF TWO NUMBERS USING LOGARITHMS OR THE LOGARITHM QUOTIENT OF TWO NUMBERS USING LOGARITHMS. [illegible]

The logarithmic product of multiplying 1500 and 760 is expressed in logarithms as 2632

a. 0.[illegible]
b. 6.0[illegible]
c. 5.0[illegible]
*d. [illegible]

The logarithmic quotient of dividing 1500 by 760 is expressed in logarithms as 2633

a. 6.0[illegible]
*b. 0.2[illegible]
c. 0.[illegible]71
d. 1.70[illegible]

USING A LOG TABLE. THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF THE LOG TABLE TO DETERMINE THE NUMBER PRODUCT OF TWO NUMBERS OR THE NUMBER QUOTIENT OF TWO NUMBERS USING THE LOGARITHMS AND ANTILOGARITHMS. C018

The number product or outcome of multiplying 1560 and 780 using logarithms is 2634

a. 1.906×10^9
b. 1.152×10^6
c. 1.229×10^5
*d. 1.23×10^6

The number quotient of dividing 1560 by 780 is 2635

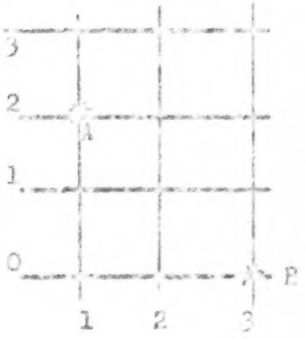
a. 120,000
*b. 1.98
c. 2.03
d. 0.506

Source: Maps, Tables and Skills, Ch. 5
Donald J. Woodruff, Silver Burdett, 1966.

GRAPHING

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF NUMBER PAIRS BY NAMING OR LOCATING NUMBER PAIRS ON A NUMBER PLANE OR GRAPH. 0035

Given the graph:



The number pair for point A is (1,2). Point B would be: 2636

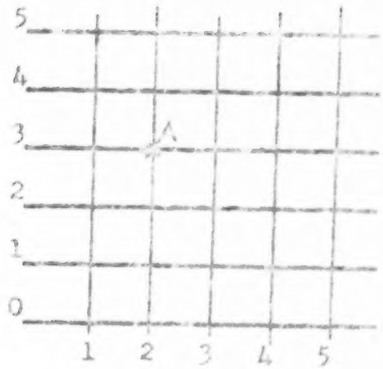
a. 0,2
b. 2,0
c. 0,3
*d. 3,0
e. 1,3

The number pairs for a graph are (1,1), (2,2), (3,1), (1,1)

If a continuous line connected all points graphed a ____________ would be revealed. 2637

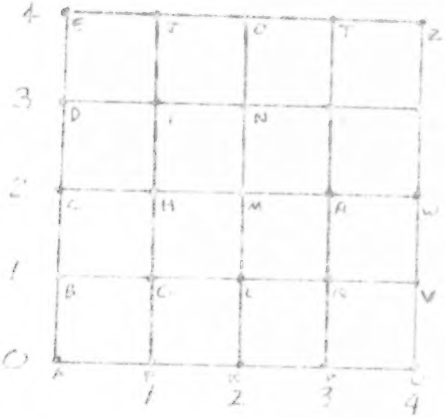
a. square
*b. triangle
c. rectangle
d. circle

Using this graph,


5
4
3
2
1
0
A
1
2
3
4
5

Point A would be: 2638

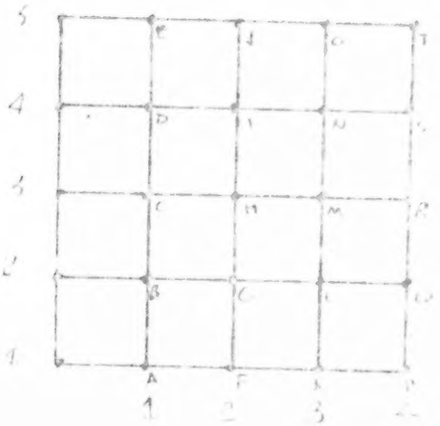
a. (1,3)
*b. (2,3)
c. (3,3)
d. (3,1)
e. (3,2)


4
3
2
1
0
E
O
T
Z
D
N
H
M
A
B
C
L
V
A
1
2
3
4

(0,1) (1,3)(3,2)(0,3)(3,3) 2639

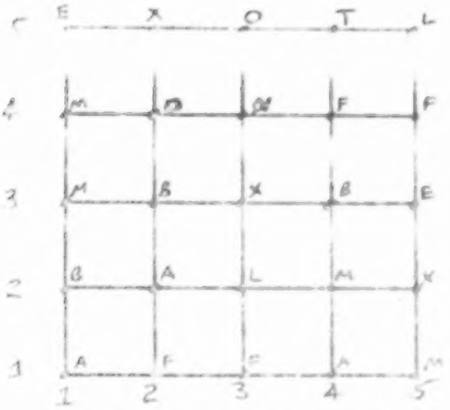
Using the graph and the number pairs above, you will spell

a. Boxes
b. Bikes
*c. Birds
d. Bands


5
4
3
2
1
E
O
T
D
N
H
M
B
C
A
F
1
2
3

Remove the letters of numbers pairs (4,1)(4,3)(1,4)from the graph above PATMERD will spell: 2640

a. rate
b. date
*c. team
d. pear
e. ream



Using the graph, football spelled in number pairs will be: 2641

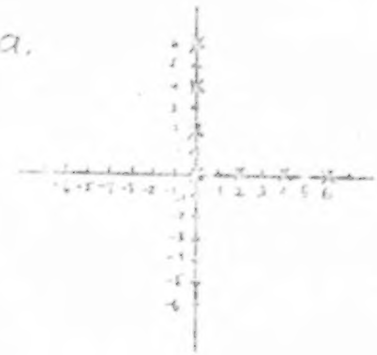
a. (3,1)(3.4)(3,4)(4,5)(0,2)(0,1)(2,3)92,3)
*b. (2,1)(3,5)(3,5)(4,5)(1,2)(1,1)(3,2)(3,2)
c. (1,3)(5,3)(5,3)(5,4)(2,1)(1,1)(2,3)(2,3)
d. (1,3)(5,3)(5,3)(5,4)(1,2)(1,1)(3,2)(3,2)

GIVEN A LINEAR EQUATION, THE STUDENT WILL APPLY HIS KNOWLEDGE OF GRAPHING TO SELECT THE DIAGRAM THAT CORRECTLY GRAPHS THE EQUATION. 0162

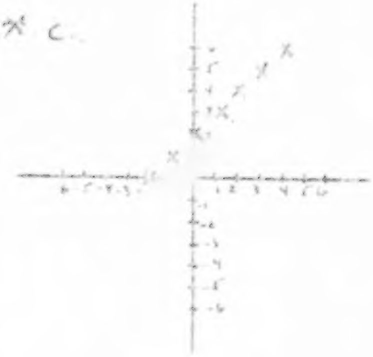
Directions: Given an equation, find the diagram that correctly graphs it.

$x + 2 = y$ 2642

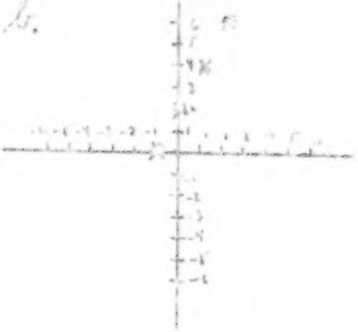
a.



*c.



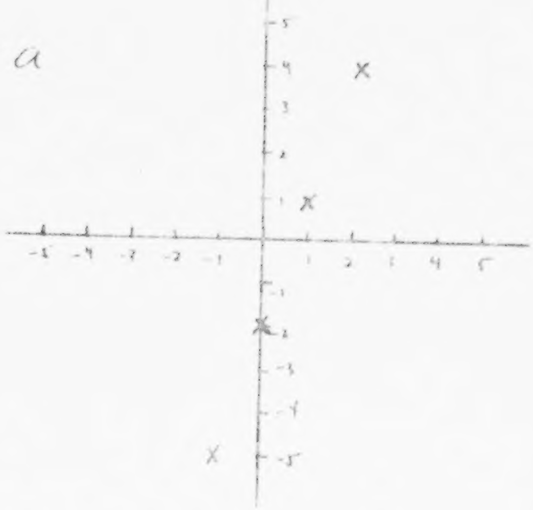
b.



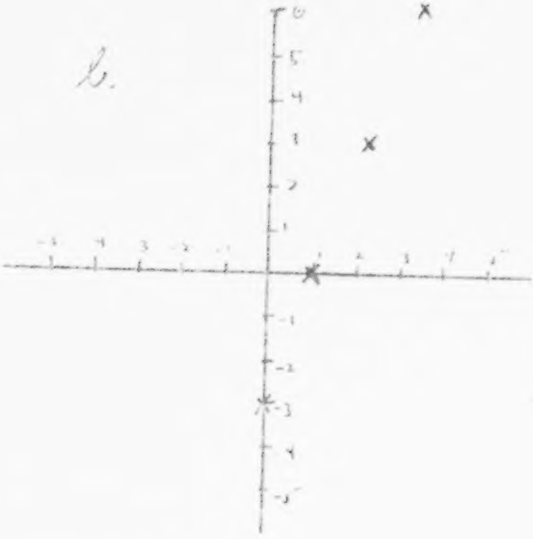
3x - 2 = y

2543

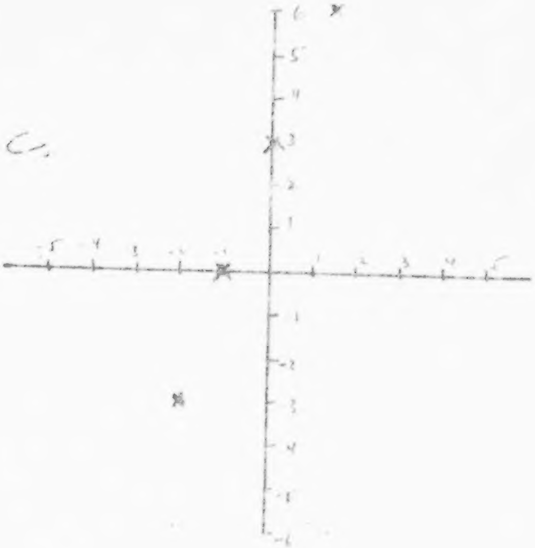
* a



b.



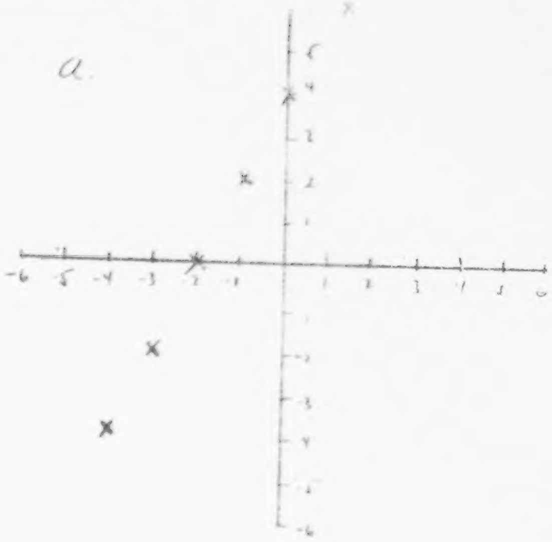
c.



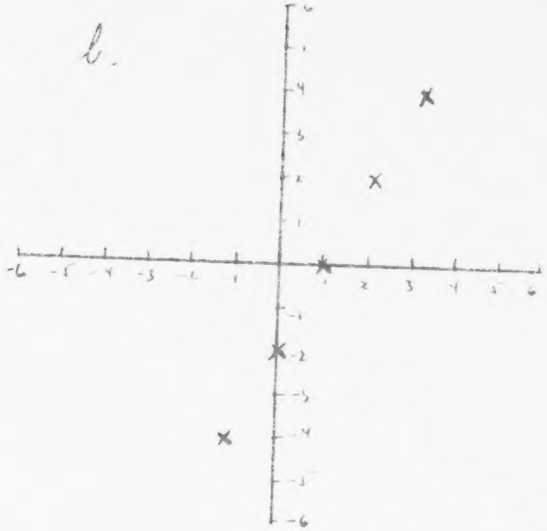
2x + -4 = y

2644

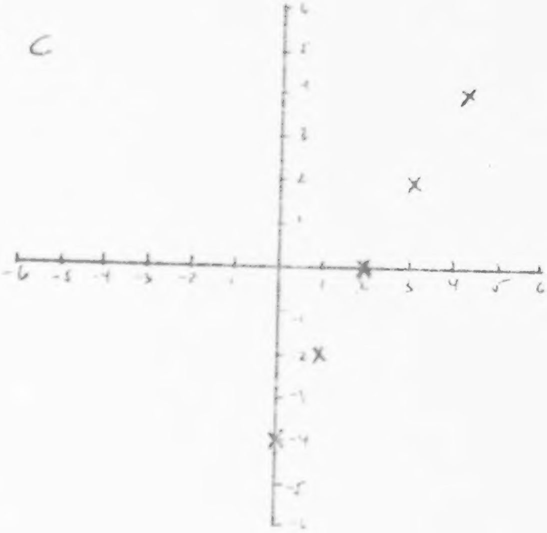
a.



b.



* c



FUNCTIONS

THE STUDENT WILL DEMONSTRATE HIS ABILITY TO APPLY FUNCTION RULES IN GIVEN EQUATIONS BY SELECTING THE CORRECT RULE FROM A GIVEN LIST. 0168

Directions: Use the function rule given to select the correct answer.

Function Rule $8x(n+5)$.
$n = 6$ 2645

a. 53
b. 72
c. 96
*d. 88

Function Rule $n + 219$ $n = 225$ 2646

a. 34
*b. 44
c. 45
d. 35

Function Rule $594-n$ $n = 18$ 2647

*a. 576
b. 566
c. 476
d. 469

Function Rule $(n \div 3) + 8$ $n = 144$ 2648

a. 46
b. 24
c. 49
*d. 56

Function Rule $(n \times 8) + 4$ $f(n) = 68$ 2649

a. 4
b. 9
*c. 8
d. 5

Function Rule (12 + n) - 12 f(n) = 10 2650

*a. 10
b. 12
c. 0
d. 24

Function Rule (100 ÷ n) + 21 f(n) = 25 2651

a. 100
b. 21
*c. 25
d. 4

Function Rule (n x 9) - 9 f(n) = 81 2652

a. 7
*b. 10
c. 9
d. 8

WHEN NUMBER PAIRS ARE GIVEN IN A DEFINITE ORDER, THE STUDENT KNOWS SOME FUNCTION OCCURS TO THE FIRST NUMBER RESULTING IN THE SECOND NUMBER BY INDICATING THAT FUNCTION. 0037

The second number in a number pair cannot be found until we know the: 2653

*a. function
b. answer
c. sign
d. name
e. order

THE STUDENT DEMONSTRATES UNDERSTANDING OF FUNCTIONS WHEN GIVEN THE FIRST NUMBER AND THE FUNCTION, THE STUDENT CAN COMPUTE THE SECOND NUMBER OR GIVEN THE NUMBER PAIRS HE CAN COMPUTE FOR THE FUNCTION. 0039

5 is added to the first number. Which is the correct set of number pairs? 2654

a. (1,5)(2,10)(3,15)
*b. (2,7)(3,8)(4,9)
c. (1,6)(2,11)(3,16)
d. (5,1)(10,2)(15,3)
e. (7,2)(8,3)(9,4)

The second number in a number pair is 18. It is 6 greater than the first. The first number is: 2655

a. 1
b. 3
c. 6
d. 9
*e. 12

The number pairs are (0,a)(1,b)(2,c)(3,e). If 7 is added to the first number which group of numbers can be substituted for the letters? 2656

a. 0, 6, 5, 4
b. 0, 8, 9, 10
*c. 7, 8, 9, 10
d. 0, 7, 14, 21

The equation is $x + 11 = y$. A set of number pairs would be: 2657

a. (3,11)(4,22)(5,33)
b. (2,22)(3,33)(4,44)
*c. (4,15)(5,16)(6,17)
d. (1,11)(2,12)(3,13)

Given this set of number pairs, name the function. 2658
(5,13)(6,14)(8,16)

a. $x + 6 = y$
b. $x \times 6 = y$
c. $x + 7 = y$
*d. $x + 8 = y$
e. $x \times 8 = y$

The number pair is (3,18). Other members belonging to this set could be. 2659

a. (4,20)(5,21)(6,22)
*b. (4,19)(5,20)(6,21)
c. (4,21)(5,22)(6,23)
d. (4,22)(5,23)(6,24)

The function is x - 7 = y. __________ is a number pair that uses this function. 2660

a. (6,0)
b. (7,1)
c. (18,17)
d. (10, 17)
*e. (21,14)

The number pairs (53,49)(22,18)(11,7) tell us the function performed is 2661

a. x - 2 = y
b. x - 3 = y
*c. x - 4 = y
d. x - 5 = y

Every time John plays marbles he loses 3 marbles. One numbered pair would be 2662

a. (m,3)
b. (3,1)
c. (b,2)
*d. (7,4)
e. (8,3)

INFERENCE

THE STUDENT WILL DEMONSTRATE HIS ABILITY TO DRAW INFERENCES BY EVALUATING STATEMENTS BASED ON DEDUCTIONS FROM A WORD PROBLEM. 0106

Directions: Read the word problem and the statements below. If the statement can be assumed true from the paragraph presented cross out the A; if the statement cannot be assumed from the paragraph presented cross out the U.

The Panama Canal crosses Central America to connect the Atlantic and Pacific Oceans. It was completed in 1914 and officially opened in 1920. Before the canal was built ships sailing from New York to San Francisco traveled about 13,000 miles. After the canal was built the same trip was 5200 miles. The canal is about 50 miles long and it takes 8 hours to pass through it. In 1962, 10,866 ships passed through the canal.

A ~~U~~ The Panama Canal was built in 6 years. 2663

~~A~~ U The Panama Canal saves ships sailing time. 2664

~~A~~ U The Panama Canal saves shipers money. 2665

A ~~U~~ The Panama Canal was dedicated by President Wilson. 2666

A ~~U~~ The canal is 250 feet wide and 50 miles long. 2667

A ~~U~~ Ships can only pass through the canal during the day. 2668

A ~~U~~ Ships no longer sail around South America to get from the Atlantic to the Pacific Oceans. 2669

~~A~~ U Over 10,000 ships passed through the canal in 1962. 2670

A ~~U~~ Only commercial vessels pass through the canal. 2671

A ~~U~~ The Panama Canal is still in use. 2672

~~A~~ U The speed of a ship moving through the canal is 6.25 mph. 2673

Source: Addison-Wesley, Bk. 5, p. 233.

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